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DARWIN IN CONTEXT

THE LONDON YEARS: 1837-1842

by

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Submitted for the degree of Doctor
of Philosophy in the Department of
the History of Science in the Open
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ABSTRACT

This thesis explores Darwin's life in London in the context of the social relationships he formed there. Recent studies have highlighted the paradox between his speculative work, with its dangerous associations with political radicalism and infidelity, and his intense desire for social respectability, evidenced by his determination to shun controversy and by his retirement to the security of family life in the Kent countryside. How Darwin coped with the tension arising from this mismatch of intellectual radicalism and social conservatism has not been explained; it is widely assumed that it was a major factor in prompting his prolonged and frequent attacks of debilitating illness.

The problem is addressed here by looking at the support Darwin drew from the friends he made in London. His experiences during the Beagle voyage had led him to focus on philosophical issues which had not previously troubled him. Having returned to England, he deliberately chose to surround himself with friends who were not afraid to adopt heterodox positions on religion and society; in their company his personal anxieties were assuaged and he could pursue new ideas with enthusiasm.

These friends had specialist knowledge in subjects which had a close bearing on Darwin's theories. His relationship

with them throws light on issues such as how the debate about religion influenced his evolutionary thinking, and the nature of the contribution made to it by Malthus. The esteem in which they were held, notwithstanding their intellectual radicalism, explains how Darwin was able to find in their company the self-confidence to develop his iconoclastic conclusions. His identification with them, and their contribution to the intellectual re-evaluation of the 1830s and 1840s, helps to account for the wide acceptance of Darwin's views, published twenty years later, when the social ideology being formulated in his youth had become the prevailing orthodoxy of mid-Victorian England.

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ABBREVIATIONS

The following abbreviations are used throughout:

B, C, D, E

Gavin de Beer, M. J. Rowlands, and B. M. Skramovsky, eds., "Darwin's Notebooks on Transmutation of Species," Bulletin of the British Museum (Natural History), Historical Series, 2, 1960, pp. 23-183; "Pages Excised by Darwin," ibid., 3, 1967, pp. 129-76. Reference throughout is to Darwin's page numbers; "e" designates an excised page.

M, N, QUN

Paul H. Barrett and Howard E. Gruber, Darwin on Man: A Psychological Study of Scientific Creativity, Wildwood House, 1974.

Sketch, Essay

Gavin De Beer, Darwin and Wallace: Evolution by Natural Selection. Cambridge University Press, 1958.

LLD

Francis Darwin, ed., The Life and Letters of Charles Darwin, 3 vols., John Murray, 1887.

ML

Francis Darwin and A. C. Seward, eds., More Letters of Charles Darwin, 2 vols., John Murray, 1903.

Emma Darwin

Henrietta E. Litchfield, ed., Emma Darwin: A Century of

Family Letters 1792-1896. 2 vols. John Murray, 1915.

References are to the 1915 edition except where the 1904 edition is specified.

Calendar

Frederick Burkhardt and Sydney Smith et al., eds., A Calendar of the Correspondence of Charles Darwin, 1821-1882, Garland Publishing, Inc., 1985.

Correspondence

Frederick Burkhardt and Sydney Smith et al., eds., The Correspondence of Charles Darwin, vol. 1, 1821-1836, vol. 2, 1837-1843, Cambridge University Press, 1985, 1987.

Origin

Charles Darwin, On the Origin of Species. John Murray, 1859.

Descent

Charles Darwin, The Descent of Man and Selection in Relation to Sex, 2nd ed., 1874, reprinted 1922, John Murray.

Autobiography

The Autobiography of Charles Darwin, 1809-1882. Page references are to Gavin De Beer, ed., Charles Darwin and T. H. Huxley: Autobiographies. Oxford University Press, 1983.

Journal of Researches

Charles Darwin, Journal of researches into the geology and natural history of the various countries visited by

H.M.S. Beagle...from 1832 to 1836. Henry Colburn, 1839.

Manuscripts belonging to the Wedgwood Museum Trust, and deposited at Keele University Library, are referred to by Keele and the reference number, for example, Keele, W/M 227.

Manuscripts belonging to the Darwin archive at Cambridge University Library are referred to by the prefix, DAR and the reference number.

CHANGING APPROACHES TO DARWIN

Charles Darwin wrote his Autobiography in the summer of 1876, making additions to it in 1878/9 and 1881. It was intended for his children and grandchildren rather than for public consumption. When his son Francis proposed its posthumous publication within his multi-volume Life and Letters of Charles Darwin it was first subjected to family censorship. Darwin's widow, Emma, and his daughter, Henrietta, in particular, were anxious to conceal the extent of his religious heterodoxy. The excised sections were not restored until 1958 when a complete unexpurgated edition was prepared by Darwin's granddaughter, Nora Barlow. Overt censorship of this kind is relatively easy to remedy, but more difficult is the self-imposed distortion in Darwin's retrospective account. Whether consciously or otherwise, he described his life in terms which enhanced its conformity with the requirements of scientific naturalism, a movement with which he was in sympathy, and which was, in the 1870's, in its most influential phase.¹

1) Darwin historiography and scientific naturalism

Scientific naturalism expressed both the confidence and

the ambition of men of science in the mid-Victorian era. Having won respect in the early-nineteenth century as interpreters of the natural world, they came, as the century progressed, to be offered the role of interpreters of the social world as well, usurping the function formerly performed by the men of letters. By the 1870's, a widely accepted definition of science was, according to T. W. Heyck, "systematic, disinterested study of any subject whatsoever". The professionalisation of science, in the sense of the establishment of career opportunities, research programmes, and specialisation, provided a paradigm for the development of other new middle-class professions.²

The foremost public exponent of scientific naturalism was T. H. Huxley, whose ceaseless endeavours for the promotion of science were lauded by Darwin even as he lamented the cost in terms of Huxley's own scientific achievements. Other prominent propagandists were Herbert Spencer, G. H. Lewes, John Tyndall and Francis Galton. Beatrice Webb, daughter of Spencer's closest friend, grew up in these years of science's greatest self-confidence:

Who will deny that the men of science were the leading British intellectuals of that period; that it was they who stood out as men of genius with international reputations; that it was they who were the self-confident militants of the period; that it was they who were routing the theologians, confounding the mystics, imposing their theories on philosophers, their inventions on capitalists, and their discoveries on medical men; whilst they were at the same time snubbing the artists, ignoring the poets, and even casting doubts on the capacity of the politicians?³

Scientific naturalism demanded an explanation of the universe freed from metaphysics, a secular system of ethics, and respect for science as an autonomous intellectual discipline. In its rejection of clerical control of society it drew support not only from agnostics and liberal Dissenters, but also from representatives of the Broad Church movement. The projection of a meliorist view of society based on scientific discovery won the support of many middle-class reformers: Henry Buckle and Leslie Stephen are two prominent examples. Widespread acceptance of the political application of scientific ideas raised the self-esteem and professional confidence of scientific practitioners. Science was appealed to for an explanation of the economic order, for the provision of material improvements, and for the reinforcement of moral values. Given that social systems were seen to obey natural law, socio-political analogies could be used to describe the order of nature, as they had been in Darwin's youth, when belief in the unity of truth was scarcely challenged.⁴

It was in this climate that Darwin wrote his Autobiography, and it is against this background that the validity of his self-portrait must be assessed. In it he distanced himself from his brother and sisters and was

"inclined to agree with Francis Galton" that education and environment were of little significance, believing instead in "innate qualities". Forty years earlier his commitment to associationism and Priestleyan necessitarianism had led him to place great emphasis on the role of education. In the Autobiography he minimised the influence of Dr Erasmus Darwin's Zoonomia, "the proportion of speculation being so large to the facts given." But the B notebook had opened with a summary of Zoonomia and in 1879 Darwin gave frank expression to his admiration of his grandfather in his introduction to Krause's Erasmus Darwin. A further example of possible distortion is his dismissal of all his formal education as time wasted. The influence of the mid-nineteenth century university reform movement is surely to be seen in this disparagement of unreformed Cambridge. Other instances of bias could be mentioned, but their main significance lies in their contribution to Darwin's strategy: the portrayal of the triumph of his pure love for science and "ambition to be esteemed by my fellow naturalists" over all other interests at whatever personal cost, whether in terms of ill-health or of the atrophy of the "higher tastes" or of the sacrifice of close friendship.³

Scientific naturalism did not retain its supremacy for long. A reaction against the extravagant claims for science

set in in the 1880's, and gathered momentum in the years leading up to the First World War. Its impact is perhaps best reflected in the changing attitudes of two of its main protagonists, Herbert Spencer and Thomas H. Huxley. In Social Statics Spencer had expressed his belief in the inevitability of human progress:

All evil results from the non-adaptation of constitution to conditions...evil perpetually tends to disappear. In virtue of an essential principle of life, this non-adaptation of an organism to its conditions is ever being rectified, and modification of one or both, continues until the adaptation is complete.

But when he wrote the second volume of the Principles of Ethics in the 1890s his hopes had given way to a gloomy pessimism, which saw no role for evolutionary theory as moral arbiter:

The Doctrine of Evolution has not furnished guidance to the extent I had hoped. Most of the conclusions, drawn empirically, are such as right feelings, enlightened by cultivated intelligence, have already sufficed to establish.⁴

Evolution had for Spencer lost its prescriptive value. While he continued to have faith in the ultimate course of human evolution, a faith he reaffirmed in the concluding paragraphs of the Principles of Sociology in 1896, the doctrine had ceased to confer upon the man of science the priestly authority Spencer once thought it should. Likewise, Huxley, who in 1860 launched his crusade for a scientific clerisy, had, by 1893, given up the notion that science could supply a system of ethics:

Cosmic evolution may teach us how the good and the evil tendencies of man may have come about, but in itself, it is incompetent to furnish any better reason why what we call good is preferable to what we call evil than we had before... the ethical progress of society depends, not on imitating the cosmic process, still less in running away from it, but in combating it.⁷

L. S. Jacyna has identified several factors which contributed to the decline of scientific naturalism: among these were a reassertion of society's need for religious belief and for the moral guidance it provides, an anti-democratic reaction extolling obedience to authority for its own sake, and a retreat from the rationalist ideal by some leaders of scientific naturalism. For, faced internally with renewed labour unrest and the emergence of an organised labour movement from the 1880's on, and externally by imperialist competition and rearmament in the years leading up to the First World War, they concluded that major areas of human affairs were beyond the reach of rationalist or scientific ideology.⁸

Science retreated into isolationism, its practitioners denying their power or even their desire to account for their work in terms of its ethical implications. This attitude has persisted throughout the present century: Sir Gavin de Beer, eminent biologist and biographer of Charles Darwin, discussing the emergence of an education-based mechanism for rapid evolutionary change, wrote "It is here that ethics enters the

picture - a domain into which science is loath to venture for lack of objective evidence on which conclusions could be based. This consideration did not, indeed, deter Plato, Hobbes, Rousseau or Marx from participating, but none of them was a man of science."

The legacy for Darwin studies of the rise and fall of scientific naturalism was twofold: firstly it dictated an insistence on the autonomy of science, its independence from cultural influence and its adoption of a methodology and language that separated it from other intellectual activity. The predominance, among historians of science, of scientists sharing such values gave rise to the internalist historiography that for so long dominated the field of Darwin studies. In the second place it produced a characterisation of Darwin suggestive of a divided personality in which the "scientist" challenged and conquered and ultimately eclipsed the "humanist"; the range of the interests of his youth were minimised and the extent of his isolation at Down exaggerated so as to reinforce the image of the solitary scientist, working empirically with his specimens and data. Even his self-confessed affective decline was used to aid this characterisation of a man who subjected all to the test of logic. L. Robert Stevens highlighted the historiographical relevance of this issue: "The picture of Darwin as a "dessicated" or "atrophied" man merely serves to aggravate the sense of a split between two cultures, whether such a split

exists or not". The conventional assumption of decline of the "higher tastes" was challenged by John A. Campbell who found evidence of affective responsiveness in Darwin's language and in the artistic construction of his evolutionary theory. He accepted that Darwin lost interest in literature and music and attributed this to the drain on his energy occasioned by his illness. "Darwin's decline of interest in literature and music was not so much part of a larger hostility to art as a response to a life situation which did not allow him a reserve of emotional energy sufficient for its demands."¹⁰

Opposition to the tradition of internalist historiography took the form of externalist works insisting on the cultural determination of scientific theory. Most notorious in terms of the hostility it aroused from the orthodox was Gertrude Himmelfarb's Darwin and the Darwinian Revolution published in 1959. In this she set out to show that the Darwinian theory was plastic, that it embodied concepts already widely accepted, and that, far from engendering a crisis between science and religion, it articulated a crisis that had already occurred. Darwinism was taken on board by people arguing for the secularisation of society, whose outlook on society was "Social Darwinist" years before publication of the Origin. For such people, Darwinism "did not revolutionise their beliefs, so much as give public recognition to a revolution that had already occurred." After twenty years the anger generated by this had not been assuaged: writing in 1982, Frederick B.Churchill rebuked

a humanist's penchant to manufacture with vindictiveness and in shocking ignorance of the science involved gross deficiencies in Darwin's personality, abilities, and theories. It appears that Darwin is destined to suffer eternally at the hands of those whose belief [is] that evolution through natural selection denigrated the human essence. The tragedy is enhanced when such critics urge their anti-Darwinian crusade with a broad knowledge of the Victorian scene and a talent for spinning a readable narrative. Such is Gertrude Himmelfarb's Darwin and the Darwinian Revolution.¹¹

A more recent externalist study was made in 1972 by Barry G. Gale in "Darwin and the Concept of a Struggle for Existence". He concluded that "The debate over Darwinian evolution went far beyond any "scientific" bounds, and the fact that intelligent laymen could and often did actively discuss the major works of biological science in mid-nineteenth century Britain seems an important indication of the imprudence of isolating a scientific community from other academic and intellectual communities of the time." Gale's study suffers from a problem of chronology. By focussing on the parallels between the theory of evolution by natural selection as propounded in the Origin and mid-Victorian theories of competitive individualist capitalism, he gives the impression of Darwin reacting to these influences. But Darwin formulated his theories when the ideology of the mid-Victorian era was itself barely emerging: interaction rather than reaction characterised the relationship. Furthermore by his presumed knowledge of the "scientific bounds" that the

Darwinian debate allegedly transgressed, he lends credence to the very internalist-externalist dichotomy that recent historiography has attempted to transcend.¹²

2) The Professionalisation of Darwin Studies

Darwin studies have in recent years been transformed by the emergence of a community of Darwin scholars who have undertaken a detailed study of the plentiful archive resources. The unexpurgated Autobiography in 1958 was followed in the 1960s by the transcription of Darwin's transmutation notebooks. These were supplemented by the publication of the metaphysical notebooks in 1974 and the Red Notebook in 1980. When the Calendar of the Darwin Correspondence appeared in 1985, and the first volumes of the Correspondence of Charles Darwin in 1985 and 1987, scholars gained access to a complete edition of letters to and from Darwin, freed from the scientistic editorial bias of Francis Darwin's original collection. Much of the scholarship resulting from this wealth of published manuscript material has confined itself to scrupulous textual analysis; it is internalist in the sense that it looks exclusively to Darwin's own words for an understanding of his thought. It is however work on which all writers on Darwin must depend, for analyses by historians such as Sandra Herbert and David Kohn provide the starting point for any further discussion of the development of Darwin's thought in the crucial years 1837-39. Since a thorough knowledge of Darwin's private manuscripts has become essential

to any such discussion, an outline of the development portrayed by these materials may be helpful.¹³

From Sandra Herbert's analysis of the Red Notebook it is clear that Darwin's conversion to transmutation was based on the professional judgements made on his collections of specimens by the experts he had called in to deal with them. The Beagle voyage had given Darwin experience in theorising, in particular in the formation of his theory about coral reefs, which, as Howard Gruber has pointed out, paralleled in several respects his later evolutionary theory. Both employed a principle of population, the notion of struggle as a limiting principle and the idea of interaction between organism and environment in a creative process. Gruber suggests the possibility of a pre-existing interest in evolution which might have governed the selection of those materials upon which his later conversion was based. This suggestion is supported by Philip Sloan's findings that, far from being a random collector, Darwin selected his specimens of marine invertebrates according to their value to the work he had already undertaken at Edinburgh University under the supervision of Robert Grant. Nevertheless it was only after the processing of his materials by specialists such as John Gould and Richard Owen that Darwin committed himself to transmutation.¹⁴

In the Red Notebook, Darwin speculated on the possibility

of transmutation per saltum, and of species senescence to explain extinction. The latter idea found its way into the Journal of Researches, not published until 1839 but written concurrently with the Notebook: "All that at present can be said with certainty, is that, as with the individual, so with the species, the hour of life has run its course, and is spent." These early hypotheses were rejected, the first because of Darwin's commitment to uniformitarianism, the second for want of corroborative evidence.¹⁵

The B Notebook represents Darwin's thinking from July 1837 to March 1838. The theory he tentatively adopted at this period was a linear transformism, with species becoming adapted to their environment by means of automatically adaptive variations disseminated by sexual reproduction. To ensure a constant number of species, as required by Lyell's climatic theory, occasional extinctions had to be balanced by speciation occurring by virtue of geographic isolation. The C Notebook was filled more quickly, between March and mid-July 1838. In this Darwin professed his materialism, and asserted the radical concept of the continuity of man and brute. He appealed to the authority of his grandfather Erasmus, whose Zoonomia he read for the second time. In Zoonomia Dr Erasmus Darwin had expressed his own belief in transmutation including the idea, associated with Lamarck, that habit precedes structure. His grandson now took up the same theme, but in place of Lamarck's teleological voluntarism, and the not

dissimilar vitalist principle of Erasmus, Charles used associationism as the causative factor.¹⁶

The Q and M Notebooks were started simultaneously in July 1838. The use of associationism to explain evolutionary development implied that the study of human behaviour could provide evidence in support of the transmutation hypothesis; he therefore devoted the first metaphysical notebook to the study of man. Darwin's enquiries became more and more wide-ranging; his reading encompassed many disciplines and ideas he considered worth noting ranged from Paley to Positivism, from the nature of emotions to necessitarianism. His tone was confident, he began to date entries in his notebooks, he started to keep a journal, and he wrote an autobiographical fragment of his life to date.

It was in the autumn of 1838 that the theory of evolution by natural selection was formulated. In this same period he considered the analogy of artificial selection and began to develop his knowledge of the fashionable art of domestic breeding, as practised by his uncle, Josiah Wedgwood, among others. Artificial selection was for Darwin a didactic device: its heuristic value was curtailed by two problems, noted in the Q notebook in September. Firstly, Darwin doubted whether speciation could ever be brought about in domestic conditions: "It certainly appears in domesticated animals that the amount of variation is soon reached - as in pigeons no new races."

Secondly the rapid change possible under artificial selection offended against his commitment to gradual transformation:

"One can perceive that natural varieties or species, all the structure of which is adaptation to habits (and habit second nature) may be more in constitutional, - more conformable to the structure which has been adapted to former changes, than a mere monstrosity propagated by art."¹⁷

The E and N notebooks were begun in October 1838: the rate of entries was slower, the content more detailed and precise; these developments were to be expected now that Darwin had "a theory by which to work" and speculation was giving way to understanding its implications and establishing its proofs. Immediately restated is the appreciation that natural selection is not an all sufficient explanation of evolution:

An habitual action must some way affect the brain in a manner which can be transmitted. - this is analogous to a blacksmith having children with strong arms. - The other principle of those children which *chance* produced with strong arms, outliving the weaker ones, may be applicable to the formation of instincts, independently of habits. The limits of these two actions either on form or brains very hard to define.-Consider the acquirement of instinct by dogs, would show habit.-¹⁸

One of the recurring problems in Darwin studies is Darwin's apparent regression from a faith in the all-sufficiency of natural selection in the years following publication of the Origin of Species. It has been suggested

that the growing emphasis placed by Darwin on alternative or supplementary causes of transformism, especially marked in the fifth edition, implied a retreat in the face of criticism. His pre-publication faith in natural selection has been demonstrated by quoting passages like the following one from a letter to Hooker:

My conclusion is that external conditions do extremely little, except in causing mere variability. This mere variability...I look at as very different from the formation of a marked variety or new species. The formation of a strong variety or species I look at as almost wholly due to the selection of what may be incorrectly called chance variations or variability.

However there is another interpretation of Darwin's apparent backsliding: the demands of the scientific community whom Darwin hoped to convert dictated a monocausal explanation. Hooker's "morbid terror of two laws in nature for obtaining the same end" was shared by others; the advance of alternative causes of variation weakened the argument as a whole. In addition, the alternatives Darwin espoused were closely related to theories already rejected: those of Erasmus Darwin, of Lamarck, and most recently of Robert Chambers in Vestiges of the Natural History of Creation. The universal opposition of the scientific community to Vestiges was a powerful deterrent against advancing the effects of habit as an instrument of change.¹⁷

It is instructive to read Darwin's own comments on Vestiges, for they show the extent to which, even in private communications to friends he was careful to couch his views in words acceptable to the reader. Thus to Hooker he condemned

Vestiges for its bad geology and zoology, but to W. D. Fox, outside the elite of scientific practitioners he could afford a greater openness:

Have you read that strange, unphilosophical but capitally-written book, the "Vestiges": it has made more talk than any work of late, and has been by some attributed to me - at which I ought to be much flattered and unflattered.

Darwin exaggerated the role of natural selection in the Origin in an attempt to make his case more acceptable to his peers in natural history; the alleged retreat under fire in the 1860's was in reality Darwin's public acknowledgement of the multicausal theory of change that he had clung to over three decades, notwithstanding some vacillation over the relative importance of each causative factor.²⁰

Following the end of the series of transmutation notebooks, Darwin set about ordering his notes while continuing to collect information from breeders and reading widely. During the period 1839-42 he filled two more notebooks, and finally, in June 1842, on holiday in Shrewsbury, he wrote the first pencil draft of his theory. The Sketch differed from the Origin in three important respects: firstly, the principle of divergence, although implicit, is undeveloped. This was the major theoretical development that occurred between 1842 and 1859, as the twin concepts of the division of labour and of the branching conception of nature gained commanding force in social and scientific ideology. Secondly, the role of geographic isolation is given greater

emphasis in the Sketch, as is that of the direct influence of the environment: this accords with the interpretation given above of Darwin's underlying commitment to a multicausal explanation of variation. Thirdly, the Sketch is written within a strongly deistic framework. Deistic references are still to be found in the Origin, but are more perfunctory and further removed. This difference reflects not only a movement in Darwin's religious belief, but a greater confidence in and mastery of his theory of evolution.²¹

The two pages that form the conclusion of the Sketch are devoted to the philosophical acceptability of the theory. There are four important arguments advanced by Darwin: in the first place, his theory makes nature more susceptible to investigation and comprehension - the long accepted goal of science: "We no longer look on animal as a savage does at a ship, or other great work of art, as a thing wholly beyond comprehension, but we feel far more interest in examining it." Secondly, it establishes that God works by means of fixed laws, as much in the organic as in the inorganic world: "It accords with what we know of the law impressed on matter by the Creator, that the creation and extinction of forms, like the birth and death of individuals should be the effect of secondary (laws) means." Thirdly, the theory explains the existence of pests and parasites - a long standing problem for the apologists of the design argument. Finally, Darwin employs the Malthusian theodicy, substituting evolutionary

development for moral improvement as the end in view: "From death, famine, rapine and the concealed war of nature we can see that the highest good, which we can conceive, the creation of the higher animals has directly come."²²

3) The Contextualisation of Darwin Studies

It is thanks to the professionalisation of Darwin studies that a narrative account of Darwin's thinking from 1837-42 such as this is possible. But professionalisation does not automatically generate an understanding of the processes which moulded that thinking. It cannot of itself throw light on the fundamental question of why Darwin pursued the questions about species that had begun to frame themselves as the Beagle began its long journey home. His zealous pursuit of the esteem of his peers in natural history, evidenced by his activities in the Geological Society and by his prolific output of articles on geology, could not be advanced by his involving himself in species speculation. The problem of species origins was a recognised one among his colleagues: what was it that made Darwin embrace materialistic transmutation, rather than the progressionism of his teacher Adam Sedgwick, or the transcendentalism of his new friend Richard Owen?²³

Similarly, professionalisation has elucidated but cannot explain the crucial role that Malthus played in Darwin's speculation. The fact of his alleged contribution has been denied altogether, or diluted to the point of insignificance:

"All that Darwin derived from Malthus was what has been called an "analogical leap" from Malthus's fallacious argument on man to a valid argument on plants and animals." But why should Darwin have dissembled? When his Autobiography was published Malthus was long dead and his Law of Population discredited. Furthermore his name had become associated with neo-Malthusianism - the advocacy of birth control - hostility to which culminated in the Bradlaugh-Besant trial of 1877. Malthus's name was not in this period one to enhance the respectability of a self-confessed admirer. That Malthus was an important influence on Darwin seems undeniable, but the nature of that influence remains problematic.²⁴

Finally, professionalisation has highlighted, but has not resolved, the paradox in Darwin's work between the materialistic formulation of the theory and its explication in terms of a personified nature. The confusion is evident not only in the notebooks but in the early drafts of the theory and in the Origin itself. It has been suggested that Darwin was captive to a language which conveys a misleading impression, or that he was consciously attempting to modify his materialism for public consumption. An alternative interpretation is that Darwin consciously held in creative tension the opposing forces of romanticism and materialism. He tenaciously clung to the phrase "natural selection" despite the warnings by Wallace and others that the word "select"

implied a selector. The suggestion that Darwin was merely seeking to appease the hostility of those who might attack his work as materialist, may be countered by referring to the notebooks and the first pencil Sketch of the theory, never intended for publication. And Darwin's "Big Book" on Natural Selection, interrupted to enable him to write the Origin, reveals the same ambiguity. It seems more likely that it was the need to defend his "unscientific" language against Hooker's scientism that led him to argue in 1863 that his use of the "Pentateuchal term of creation" was truckling to public opinion. But to decide such issues it is necessary to understand the changing role of science in society and the changing self-image of scientific practitioners.²⁵

Illumination of this broader context was the aim of Cannon's pioneering work Science in Culture. Cannon demonstrated the degree to which natural science provided a "norm of truth" for early Victorians and postulated a "Cambridge network", a loose alliance of scientific and literary figures sharing a common belief in the unity of knowledge, a sympathy with Broad Church attitudes and an interest in the advancement and professionalisation of science. In this sense of promoting scientific endeavour, the network may be seen as a forerunner of the next generation of natural scientists, but the latter's denial of the unity of knowledge marked a decisive break.

The most prominent and consistent appeal for a new approach to Darwin studies has been made by Robert Young. In a series of articles written between 1969 and 1973, collected together and reprinted as Darwin's Metaphor, Young has demonstrated the common themes that run through the work of Malthus, Lyell, Darwin, Wallace and Spencer; he has drawn attention to parallels between the economic doctrine of the division of labour and certain tenets of Darwinism; and he has demanded that these issues be explored through the location of Darwin in his cultural context. Young commented in 1973 on the hostility that greeted his demands:

I have been surprised by the extreme reaction of some scholars to earlier versions of this essay. Some imply that scholarship is - or can be - neutral and objective. Others seem unable or unwilling to grasp that there is a long tradition of philosophy, scholarship and political activism which does not acknowledge that the "fact-value" distinction can operate with any precision.

Few historians who took up Young's challenge have proceeded as far as Young himself wished; for the most part, the need to produce work that would satisfy the strict criteria of proof demanded by orthodox historiography of science has inhibited too radical an approach. But what has characterised the community of contextualist historians that has been at work since the 1970's has been the determination to transcend the internalist/externalist dichotomy by viewing the history of science as inseparable from general cultural history.²⁶

Prominent among contextualists was Dov Ospovat who sought a model less offensive to the ideal of objectivity than that

proposed by Young. In The Development of Darwin's Theory he proposed a process in which the scientist operates within a framework of "socially constructed" conceptions of nature:

If people with particular interests succeed in making their view of the world appear "natural", theorists in succeeding generations, who may or may not have precisely the same interests, but who are located and educated in a society that has learned to see nature in the same way, will be very likely to produce theories that are shaped by assumptions and perceptions that originated in the political and social interests of their predecessors. And such theories, whatever the attitudes or intentions of their authors, will inevitably convey some parts of the ideology that is built into society's view of nature. The advantage of looking at the question in this way is that it avoids the difficult problems of discovering the social, political, and religious interests of the scientist or of the social group to which he belongs and of correlating them directly with his scientific ideas.²⁷

Ospovat's work was of major significance in developing an understanding of Darwin's speculation and particularly of the emergence of the concept of divergence. But his model of secondary or indirect contextualism, whilst useful in stressing the role of ideology in providing the framework within which Darwin and his contemporaries worked, is of limited application. It fails, for example, to elucidate the innovative intellectual climate of the London where Darwin lived at the beginning of his career. His contemporaries were rewriting the Scriptures on the model of German scholarship, rewriting social theory to accommodate society to the new demands of industrialisation and to the increasing power of the middle classes, rewriting political philosophy in the face of Chartism and revolutionary nationalist movements abroad.

This was a period of rapid change and social dislocation when London intellectuals confidently and self-consciously took on the role of interpreting that change and prescribing the methods for reordering society. To discover how far Darwin himself participated in this endeavour requires a more direct study of his place in society than Ospovat's less robust contextualism can afford. However different their approaches, though, what is shared by contextualists is a commitment to the view that a full understanding of Darwin, his achievement and its impact on society demands that Darwin studies are looked at in a richer context, and not in the isolated way of earlier historians of science.

The results of this revision have been rewarding: J. R. Moore has demonstrated the extent to which natural theology shaped the questions raised by Darwin and dictated the areas upon which his speculation focussed. Natural theology has been shown to be socially constructed, lending religious sanction to a defence of the status quo. Its cultural dependency has been revealed by studies of its internal divisions, as attempts were made to adapt its doctrines to changes in the broader society. To studies of the theological context have been added studies of the socio-political context: the absorption of Malthusian population theory into orthodox economic thought has been noted by Howard E. Gruber, and the high prestige of classical political economy

by Sylvan S. Schweber. Elaboration of the ideological context in which Darwin developed his ideas has been matched by elaboration of the context in which they were disseminated. Studies of Social Darwinism have proceeded to show that the values attributed to it were as much in evidence before the publication of Darwin's work as after. John C. Greene for example concluded that "what we call "Social Darwinism"... was endemic in much of British thought in the mid-nineteenth century, that Darwin's Origin of Species gave a powerful boost to this kind of thinking, and that Darwin himself was deeply influenced by this current of thought." Similarly Greta Jones argued that "ultimately Social Darwinism resolved itself into a theory which began from the "reality" of existing social relationships - or more often an ideological picture of them - and argued back to their "natural" causation." Much of the ambiguity in Darwin's writings may be seen as arising from changes occurring in the dominant ideology in the period between the genesis and the publication of his theories.²⁸

Turning once more to the character and personality of Darwin himself, several scholars have exploited the archive material to locate him more precisely within the social and ideological context of the period. Edward Manier has followed literary references in Darwin's notebooks to establish the range of sources consulted by him. He has drawn especial

attention to the influence of romanticism, so prompting further studies into Darwin's cultural inheritance. James Secord has looked at his social milieu and shown how particularly well-placed he was to bridge the gap that divided breeders from naturalists, and so acquire the data with which to develop his analogy of natural selection. J. R. Moore has studied his life at Down in the light of references in his correspondence that indicated his high esteem of the lifestyle of the conventional country parson; this work has forced a recognition of the need to balance the radicalism of his species speculation with an understanding of his intense need for social respectability.²⁹

Such a recognition poses the difficult task of reconciling the conventional social aspirations of Darwin, as revealed by his life at Down, with the highly unorthodox views on species origins, and particularly on the place of man in nature, that he formulated in London and continued to develop even whilst pursuing the role of country gentleman. The solution to this dilemma may lie in an appreciation of his own high degree of adaptability to his social environment. Darwin consciously chose to establish himself among his brother's friends in London, rather than among the more conservative intellectual circles of Cambridge. The community he joined was confident and highly renowned, and in their company Darwin partook of their mantle of confidence. During the first two years of his speculative odyssey, when he was most concerned

with the philosophical aspects of the concept of transmutation, his interests overlapped significantly with those of his friends, who offered a forum for the analysis of ideas drawn from his vast reading programme. His speculation both gained from, and contributed to, their common intellectual endeavour.

Darwin's closest friends in London, outside the ranks of his scientific colleagues, were individuals whose lives were preoccupied by the problems of society and religion; they comprised Darwin's older brother Erasmus, dedicated to "literary pursuits", his cousin Hensleigh, overridingly concerned with religious issues, Hensleigh's wife, Fanny Mackintosh, supporter of Mazzini and advocate of women's education, her friend, Harriet Martineau, populariser of political economy, and Thomas Carlyle, then at the height of his fame and influence as arbiter of moral values. These companions, and others to whom they were related by an identity of interest, were engaged in the articulation of a new role for the educated middle class. They saw themselves as an intellectual clerisy just as much as Darwin's contemporaries among scientific practitioners were beginning to view themselves as leaders of a scientific clerisy. They sought to prescribe an ideology that reflected bourgeois

hegemony. Darwin was a member of this embryonic intelligentsia; its values and its ideology were to a large extent his own. An examination of two traditional issues in Darwin historiography, that of the relationship between his theory and his religious beliefs and that of the influence of Malthus, highlights the debt, both substantive and psychological, that he owed to his London environment. Darwin's friends helped him to develop the conceptual framework from which the theory of evolution by natural selection arose and gave him the intellectual confidence, by virtue of their own challenges to the old orthodoxy, to pursue his contribution to the establishment of the new.

NOTES TO CHAPTER ONE

- 1 For analysis of the family censorship of the Autobiography see Moore, 1987.
- 2 The following exposition of scientific naturalism is indebted to L. S. Jacyna's PhD. thesis "Scientific Naturalism in Victorian Britain". Heyck, 1982, sees in scientific naturalism the incentive for the professionalisation of other disciplines (p. 120); but whilst science may have led the way, professionalisation was necessitated by the emergence of a populous educated middle class for whom the traditional middle class professions of bar, church and medicine provided inadequate opportunities.
- 3 Darwin to T. H. Huxley, 20 July 1860, ML, I, 156; Beatrice Webb, My Apprenticeship, quoted by Turner, 1980a, p. 50.
- 4 On the support of Unitarians and Broad Church Anglicans for science, see Wigmore-Beddoes, 1971, p. 90. Buckle's History of Civilisation in England, read with approval by Darwin, proposed a science of society using natural science as its model. On science as a "norm of truth" in early-Victorian Britain see Cannon, 1978, chapter 1.
- 5 Autobiography, p. 22, cf. Q, 220 and QUN, 25-27. Autobiography, p. 27, cf. also Colp, 1986b. Autobiography, p. 32. On the university reform movement

- see Heyck, 1982, pp. 161-186. Autobiography, pp. 84-85.
- 6 Spencer, Social Statics, quoted by Peel, 1971, p. 100;
Spencer, Principles of Ethics, II, v, quoted by
Himmelfarb, 1959, p. 356.
- 7 Spencer, 1897, pp. 598-601. On Huxley's confidence in
1860 see Moore, 1986a, p. 71, and T. H. Huxley, "Man's
Place in Nature", 1860, in Bibby ed., 1967, pp. 147-9,
cf. T. H. Huxley, "Evolution and Ethics", 1893, *ibid.*,
p. 173.
- 8 Jacyna, 1980.
- 9 De Beer, 1969, p. 108.
- 10 On the emergence of history of science generally from
internalism, see Shapin, 1982, and on the emergence of
Darwin studies, see Oldroyd, 1984, pp. 331 et seq.;
Stevens, 1982, p. 59; Campbell, 1974, *passim*, p. 161.
Campbell's study predated the development of the
psychological explanation of Darwin's illness: it could
be argued that the attribution of diminished interest in
art to the debilitating effects of a psychosomatic
illness is no explanation. But the psychological theory
also employs circular reasoning: affective decline is
evidence of the spiritual anxiety which occasioned
Darwin's illness, but his illness provides the evidence
of spiritual anxiety.
- 11 Himmelfarb, 1959, p. 373; Churchill, 1982, p. 61.
Despite her critics, Himmelfarb's study has provoked and
encouraged much of the revisionist literature of the

past two decades.

- 12 Gale, 1972, pp. 344, 342.
- 13 De Beer et al. eds., 1960-1967, Gruber and Barrett, 1974, Herbert ed., 1980: a new edition of the collected notebooks is in preparation, to be published by Cornell University Press. The analyses referred to are Herbert, 1970 and 1974 and Kohn, 1980. On the dependence of contextualists upon internalist scholarship see Oldroyd, 1984, pp. 336-7, 360.
- 14 Gruber, 1985, p. 19; Sloan, 1985, p. 88.
- 15 Darwin's Journal of Researches, p. 212, quoted by Kohn, 1980, p. 76, n. 15.
- 16 Dr Erasmus Darwin was also committed to the continuity of man and brute: see extracts from Zoonomia and Temple of Nature in Krause ed., 1879, pp. 186, 194.
- 17 D 104, 107, and see Kohn, 1980, pp. 136-8. Secord has shown how well placed Darwin was to bridge the divide between naturalists and breeders/horticulturalists: Secord, 1985, pp. 525-528.
- 18 Autobiography p. 71. N 42-43e. Richards, 1981, points out that, with the exception of this passage, instinct throughout the N notebook was explained on the basis of hereditary habit (p. 204).
- 19 Vorzimmer, 1970. Darwin to Hooker 23 November 1856, LLD, II, 86. Hooker to Darwin, March 1862, quoted by Vorzimmer, 1970, p. 80. The lack of a clear causative principle was the main intellectual argument raised

against Vestiges by the scientific community: see Herschel's BAAS Presidential address 1845 in Basalla et al., eds., 1970 pp. 406-7. Emotional hostility was much greater: it was obviously in Darwin's interests to minimise any resemblance between his theory and that of Chambers. Thus, while Richards, 1981, contends that it was the heuristic use of the analogy of domestic breeding that allowed Darwin to understand the application of natural selection to the case of neuter insects in 1857 (p. 225), an alternative explanation is that Darwin came to this understanding under the pressure of the need to avoid the taint of Lamarckism; the same strategic imperative dictated Darwin's negative appraisal of his grandfather's work in the historical preface appended to the second and subsequent editions of the Origin: see Colp, 1986b, pp. 5-7.

- 20 Darwin to Hooker, 7 January 1845, and Darwin to W. D. Fox, 13 February 1845, both quoted in Colp, 1986a, p. 22.
- 21 On the principle of divergence see Ospovat, 1981, and Schweber, 1985.
- 22 De Beer, ed., 1958, pp. 86-7. The parallel between Darwin's language and Malthusian theodicy is identified in Moore, 1979, pp. 312-314.
- 23 Darwin's friendship with Richard Owen in his London years was "edited out" of early editions of his correspondence, and has been revealed largely as a

result of the publication of the second volume of the Correspondence.

- 24 De Beer, ed., 1983, p. xi.
- 25 On linguistic problems facing Darwin see Beer, 1983, pp. 50-54. Beer describes Darwin's position as one of "romantic materialism" (p. 42), but Gruber, 1981, considers Darwin's theory to be "utterly materialistic" (p. 207). A. R. Wallace to Darwin, 2 July 1866 and Darwin to A. R. Wallace, 5 July 1866 in Marchant, ed., 1916, I, 170, 174. Darwin to Hooker, 29 March 1863, LLD, III, 18.
- 26 Young, 1985, passim and p. 271, n. 165.1. The need to transcend the internalist-externalist dichotomy was reiterated by La Vergata, 1985, p. 935.
- 27 Ospovat, 1981, p. 231.
- 28 Moore, 1979, especially pp. 308-311; Brooke, 1977, 1979, 1985 and Richards, 1981; Gruber, 1981 and Schweber, 1980; Greene, 1981, p. 123 and Jones, 1980, p. 194.
- 29 Manier, 1978; Secord, 1981, 1985; Moore, 1985.

LONDON

The transmutation and metaphysical notebooks have provided the most important documentary materials for the study of Darwin during his years in London. Evidence drawn from them has been responsible for a substantial change in his biographical treatment. No longer viewed as the solitary genius working empirically in the Kent countryside, he is recognised now as an urban intellectual, a theoretician of impressive ability, capable of absorbing and utilising information drawn from a vast range of sources. But the detailed knowledge of Darwin's life at Down, supported by the evidence of his correspondence, reveals that he was socially conservative and reluctant to challenge convention. This raises the question of how he could reconcile himself to the radical social and religious implications of his evolutionary theory. It has been suggested that the stress he suffered as a result of the inevitable conflict gave rise to the frequent attacks of illness with which he was afflicted and accounted for the long delay in publishing the Origin. The appeal of rural life, and of the role of "squarson", lay in its respectability and in the insulating wall it erected between him and his potential critics.¹

One danger of an overreliance on the notebooks for an understanding of Darwin in his London years is that of attributing too much importance to his species speculation at the expense of other aspects of his life. The view of Darwin as torn between his metaphysical convictions and his desire for respectability depends on seeing the issue of species speculation as Darwin's dominant concern to a degree that, in the years 1837-42, at least, does not seem to be justified. The significance of his professional ambition, itself a major source of stress, as well as the sheer weight of his career programme, is underestimated. Nor is sufficient recognition attached to the enjoyment which Darwin derived from his participation in intellectual circles in which heterodoxy was the norm, in which indeed the desire to conform would encourage, rather than deter, radical philosophy. From a broader study of Darwin's London years, and the portrait of a more self-confident and a more rounded personality which that study produces, three important points emerge: firstly, Darwin was driven by strong professional ambitions; secondly, he eagerly engaged in wide-ranging intellectual debate; and thirdly, his species speculation was divorced from his "professional" work, and was, in this period, of secondary importance to that work. He was subject, certainly, to anxiety, but of this anxiety the implications of his adoption of transmutation was only one component among many, such as the need to win professional esteem and, subsequently, to set himself up as a family man.

1) The choice of career

When Darwin left England on the Beagle in December 1831, his plans for a career were those set for him by his father, Dr Robert Darwin. Upon learning that Charles intended to abandon the medical profession for which he had trained at Edinburgh University, he decided that his son should be a country clergyman. Whilst enjoying the security and respectability attached to the incumbency of a rural parsonage, he would have time and opportunity to pursue the naturalist enthusiasms that had been his main source of pleasure in Edinburgh. To prepare him for this future he was sent to Cambridge University where he took his degree in 1831. In no immediate hurry to continue his theological studies, Charles began to plan an expedition to the Canary Islands to study geology and botany. The opportunity to travel with the Beagle represented an enlargement of these plans rather than a reluctance on Charles's part to accept the career arranged for him. Dr Darwin's grudging acquiescence was won on the basis that the voyage was no more than an educational interlude in his son's progress. Charles determined to exploit the opportunity to the full. "The principal objects", he wrote in his diary before leaving England, "are 1st, collecting, observing and reading in all branches of Natural History that I can possibly manage. Observations on Meteorology, French, and Spanish, Mathematics, and a little Classics, perhaps not more than Greek Testament on Sundays. I hope generally to have some one

English book in hand for my amusement, exclusive of the above mentioned branches. If I have not energy enough to make myself steadily industrious during the voyage, how great and uncommon an opportunity of improving myself shall I throw away."²

As an undergraduate, Darwin had been recognised as a naturalist of particular ability. He became a protégé of the Rev. John Stevens Henslow while at Cambridge and was introduced by him to the grand masters of geology, Professors William Whewell and Adam Sedgwick. The latter introduction led to Charles's inclusion on a geological tour of Wales in August 1831, a tour which amounted to a concentrated form of field training. Writing from Rio de Janeiro the following year, Darwin asked Henslow to "Tell Prof. Sedgwick he does not know how much I am indebted to him for the Welch expedition. - it has given me an interest in geology, which I would not give up for any consideration. - I do not think I ever spent a more delightful three weeks, than in pounding the NW mountains." Sedgwick had been equally pleased with Darwin, writing after the latter's departure about his continued researches in Wales as to a colleague rather than a pupil.³

Henslow and Sedgwick both provided models of men who were among the foremost naturalists of the day whilst also holding office in the church. More commonly, the naturalist-

cleric was of the type of Darwin's cousin, and closest friend of his Cambridge days, William Darwin Fox. Fox had introduced Darwin to entomology and had procured for him the invitation to Henslow's weekly gatherings that had set him on the path of success in natural science. After leaving Cambridge, Fox entered the church, married and established a family, whilst yet retaining his interest in entomology. This was undoubtedly the path Charles Darwin was expected to follow, and it is significant that Gilbert White's The Natural History of Selborne was a favourite book of his schooldays, and remained on his reading list of "Books to be Read" in 1838. Nevertheless, as Sedgwick exemplified, the two roles could be combined in such a way as to allow natural history to be the dominant partner: Henslow perhaps foresaw this future for Darwin when he proposed his name to join the Beagle expedition, when he agreed to receive his dispatches of specimens and notes, and when he arranged for the presentation of the geological passages of those dispatches both at the Philosophical Society of Cambridge and at the Geological Society of London. It was Henslow's efforts that ensured that on his return, Darwin was accepted, as he told Fox, among "the Dons in science."⁴

Darwin's correspondence during the Beagle voyage testifies to the strong appeal that the Fox model of entomologist/ clergyman/family man had for the solitary sailor. Assailed by bouts of homesickness, he conjured up

visions of a tranquil future in a country parsonage. Such visions were at all times encouraged by his sisters. From the outset of the voyage, their letters urged a premature return, and reminded Charles of his destiny. In July 1832 Catherine wrote, in response to an enthusiastic account of his time in Brazil, "I can conceive nothing more extraordinary and interesting than to be quietly living in a Brazilian cottage - but do not let the cottage put the parsonage out of your head, a far better thing, and which we were rejoiced to hear continued to be a vista to your prospects." Catherine even supplied the answer to Charles's fear that the requisite "parson's wife" would be unavailable by the time of his return (a fear aroused by the news of the marriage of his girlfriend Fanny Owen to one Mr Biddulph, and of his beautiful cousin Charlotte Wedgwood to the Rev. Charles Langton): "I hope you will in all probability find Fanny Wedgwood disengaged and sobered into an excellent clergyman's wife by the time you return, a nice little invaluable wife she would be."

Father and sisters wished him to enter the church, it was a course not incompatible with his scientific aspirations and it offered a lifestyle that he found appealing. Why then did Charles not pursue his original intention and take orders on his return to England? One theory is that the plan was never formally set aside: "Rather, having been delayed, postponed, then ignored, a clerical career had been overtaken

by events." It seems probable that Charles did not explicitly repudiate his father's plans: throughout his life he avoided personal controversy where possible. Yet from the time that the Beagle returned to England there never seems to have been any pretense that the clerical career was still an option: indeed his family appear to have been reconciled to its abandonment for some time before his return. In February 1836 Susan wrote "Papa and we often cogitate over the fire what you will do when you return, as I fear there are but small hopes of your still going into the Church...."⁶

Darwin's move from Cambridge to London in March 1837 confirmed his intention to follow a different path. His father's promise of continued financial support made viable the London plan: despite his often-voiced anxieties, financial considerations did not in practice constrain Darwin at this or at any other stage of his life. His father had supported him during the voyage, was continuing to support his brother Erasmus, and it was not unnatural to assume that he would be prepared similarly to support Charles. The Autobiography suggests that even in his Edinburgh days he had trusted to his father to provide him with independent means:

I became convinced from various small circumstances that my Father would leave me property enough to subsist on with some comfort, though I never imagined that I should be so rich a man as I am.⁷

What is undoubtedly the case is that as the voyage progressed, the models of Henslow, Sedgwick and Fox were increasingly challenged by those of the London-based geologist, Charles Lyell and Darwin's older brother Erasmus. The vacillation over whether to live in Cambridge or in London, represented the struggle for supremacy between the competing lifestyles of rural cleric and urban intellectual. Cambridge had much to recommend it as a place to live: in purely practical terms Darwin's first task was to organise his specimens, and these were at Cambridge under Henslow's protection. And although he subsequently affected little respect for a Cambridge education, he had a real liking for the place. In April 1835 he had responded to news of a trip that Erasmus made there with "I cannot fancy anything more delightful than his Sunday round of Kings, Trinity, and those talking giants, Whewell and Sedgwick." In January 1836 he wrote to Henslow that "it is beyond bounds delightful to feel the certainty that within eight months I shall be residing once again most quietly in Cambridge."²³

But the charms of Cambridge were ultimately overpowered by the attractions of metropolitan society. In the first place London offered the company of Charles Lyell and his own particular brand of "professional" science. Darwin had become a Lyellian disciple during the Beagle voyage as a result of reading, on Henslow's recommendation, the Principles of Geology. The first volume, a gift of Captain FitzRoy, had

accompanied his departure from England and further volumes were forwarded to him by Henslow as they became available. Content analysis of Darwin's letters to Henslow during the voyage have revealed that under the influence of his new mentor Darwin began to concentrate his energies on geology, displacing to some extent his biological researches. Similarly the letters became less concerned with his role as collector of specimens, and more involved with theorising. Lyell had himself been involved in the voyage of the Beagle when FitzRoy had sought advice from him relating to the surveying of South America, and his interest in the Beagle's young naturalist had been stimulated by the Geological Society readings of Darwin's dispatches. He expected to find in Darwin a kindred spirit. Writing to Sedgwick on 25th October 1835, he declared "How I long for the return of Darwin! I hope you do not mean to monopolise him at Cambridge." When the Beagle returned, Lyell lost no time in forming the acquaintance: Darwin arrived in London on the 20th October and dined with Lyell on the 29th. Through Lyell he met Richard Owen and other leading figures of London's scientific fraternity."

In addition to accepting many of Lyell's geological theories, Darwin was attracted by the model of professional scientist that Lyell represented. Professionalism connoted for Lyell neither formal training or qualifications nor salary receipts; his own financial independence, like that of

Darwin, meant that the need for self-financing career positions in science, which preoccupied professionalisers like Babbage, was largely irrelevant to him. But he supported the British Association for the Advancement of Science (BAAS) as a means of augmenting popular respect for science, and he regularly attended its gatherings. Lyell's formal training had been as a barrister, his geology learned as an undergraduate attending Professor Buckland's lectures at Oxford as a member of the Geological Society. For Lyell the professional was one who pursued his scientific researches single-mindedly, unimpeded by external restraints. He was opposed to the practice of combining posts in the Church with posts in natural science: valuable research time was squandered, while the divided loyalties of the clerical-naturalist militated against the spirit of independent inquiry that science demanded. He further considered that the closeness of the relationship between science and religion was potentially dangerous for religion. Commenting on the subject in a letter to a correspondent in 1856, Lyell raised the cases of Adam Sedgwick and Henslow as instances of men of science whose careers had been stunted by their accepting advancement in the church. In addition, professionalism implied for Lyell the concentration of energy upon original research in a chosen specialism; he was painfully aware of the primitive state of Natural History: "I am getting on in Natural History" he wrote in 1835, "and it would be easy to be somebody among our geologists for "dans le règne des

aveugles les borgnes sont rois" but the departments of our science are so multifarious that one becomes almost unavoidably a smatterer in everything."¹⁰

Darwin evidenced his commitment to Lyellian professionalism in the painstaking field work he accomplished during the voyage, in his early determination to live in London, and most of all in his abandonment of a clerical career. Already on the Beagle he had begun to make preparations which laid the ground for his future career as a geologist. His Journal had been forwarded to his family in instalments, with instructions that it be preserved until his return when he would write it up in book form. Meanwhile Henslow was requested to take the appropriate preliminary steps towards his election to the Geological Society to ensure that he might become a member with the least possible delay. When he finally docked at Falmouth on the 2nd October 1836, after an absence of nearly five years, he allowed himself just twelve days holiday with his family before setting off in pursuit of his career. The experiences of the voyage ensured that his specialism would be geology; he was contemptuous of the Zoological Society, although an exhibition of his specimens there in 1837 brought him much acclaim; he took no interest in the Royal Society and little in the Linnean. By contrast, his membership of the Geological Society was quickly followed by election to its Council and in February 1838 by his appointment as Secretary.

Lyell had warned against the dissipation of energy in office-holding, lamenting the cost to his own time of his period as President, and Darwin expressed to Henslow his fears that acceptance of office would retard his progress with the Geology of the voyage; but Darwin's name had been canvassed for the post by the then President, Professor Whewell, and the prestige it carried justified the work involved. He was Secretary for three years, and undoubtedly found it burdensome, but it served to identify him with the leadership of the Society.¹¹

Darwin's position in the world of geology has been studied by Martin Rudwick. He has shown that in his London years, Darwin was fully integrated in the common enterprise in which the Geological Society was involved, the problem of recent crustal mobility. The extent of this integration was such that Darwin could meet on equal terms men such as John Herschel and William Whewell and discuss with them those methodologies of science with which he would have to contend in the future when drafting his theory. By the spring of 1838 Darwin had been afforded membership of the elite geologists, a group of only five to ten practitioners upon whom was conferred the right to pursue work at a theoretical level, exempted from the Baconian empiricism demanded by the Society of its practitioners of lower status. Rudwick concludes that the sense of legitimacy so acquired, as well as the practical training in theorising, were of crucial importance to Darwin

importance to Darwin in pursuing his species speculation to a satisfactory conclusion. In the present context, Rudwick's study is valuable in underlining the degree of Darwin's professional identification with the elite corps of geologists.¹²

Darwin's professional career was no part time activity. His production of papers for the Geological Society was prolific: three papers were presented in 1837 alone, despite the recording in Darwin's diary that he was "From March 13th to end of September entirely employed in my Journal". This Journal of Researches during the Voyage of the Beagle was finally published in 1839, when it sold well. Darwin received complimentary letters from Humboldt and Richard Owen among others, and later recorded in his Autobiography that "The success of this my first literary child always tickles my vanity more than that of any of my other books". In addition to preparing the Journal for publication, and presenting papers to the Society, Darwin was involved in the time-consuming task of the supervision of the Zoology: this involved finding specialists to examine his specimens and negotiating with the Treasury for a government grant to assist in publication. His efforts on both counts were successful; indicative of his ambition and of the respect in which he was already held, he secured Professor Owen to study his fossil collection and John Gould his birds. The Treasury meanwhile provided a grant of £1000. Finally, Darwin was

engaged in plans for the Geology of the voyage which he was to write himself. It was a sufficiently daunting task: to Henslow he confided "the Geology will take me a great deal of time, I was looking over one set of notes, and the quantity I found I had to read, for that one place was frightful."¹³

His work on the Geology continued in 1838, but the need to make practical contributions to the Society's work was not neglected: in June he travelled to Glen Roy to study the parallel roads, completing the writing of the paper thereon in September. The theory he put forward was subsequently disproved and Darwin confessed himself ashamed of it, but at the time it was well received. With the Glen Roy paper finished, Darwin proceeded with the Geology of the voyage in the form of a volume on coral reefs, a preliminary paper on which subject he had presented to the Geological Society in the summer of 1837. As he set out on this project he wrote to Lyell that he expected it would take him some four or five months; in fact, he grossly underestimated the time he would need, and the coral volume continued to dominate his working life until May 1842.¹⁴

Of Darwin's London years, enough has been said to show that his professional life was full and varied. His work was applauded by the scientific community even as he achieved a measure of popular acclaim through the exhibition of his specimens at the Zoological Society and through the

publication of his travelogue. Before he left London his books on the parallel roads and on coral reefs had been published and he had supervised through to publication Parts II, III, and IV of the Zoology of the voyage (on mammals, birds and fish). He had received official accolades, including election to the Royal Society in January 1839. He was one of the younger elite of geological practitioners, whose work was considered of sufficient calibre to warrant his participation in the theoretical work of the Geological Society. His immediate professional ambitions were satisfied.

2) Darwin's Life in London

If Lyell personified the professional reasons for Darwin's decision to settle in London, his brother Erasmus personified the personal reasons. The Beagle years had been lonely ones for Darwin: he had little in common with the crew, and no experience of mixing with people of a lower social status than his own. Even before the Beagle departed, Henslow cautioned him against snobbishness in his dealings with the ship's company:

If I may say so, one of your foibles is to take offence at rudeness of manners and anything bordering upon ungentlemanlike behaviour...we must make abundant allowances for mal-education, early contamination, and vulgar feelings, if we really intend to pass smoothly through life - and I therefore exhort you sincerely and affectionately never to feel offended at any of the coarse or vulgar behaviour you will infallibly be subjected to among your comrades.¹⁵

However hard Darwin may have tried to follow this advice, and despite friendly relations with the junior officers, he was inevitably thrown back on Captain FitzRoy for intellectual companionship. But FitzRoy was moody, and his outlook as a high Tory and Anglican zealot frequently came into opposition with the liberal nonconformist tradition of the Wedgwood-Darwin circle. Years later he recalled arguing with Darwin about the truth of divine revelation; they argued too about social issues like the institution of slavery; and their arguments had repercussions for the whole ship as they plunged FitzRoy into fits of ill-temper. For long periods Darwin was effectively alone, and his longing for family and friends are a constant feature of his letters. In June 1832 for example, he wrote to his Cambridge friend J. M. Herbert "In a voyage of this sort, if one gains many new and great pleasures, on the other side the loss is not inconsiderable. How should you like to be suddenly debarred from seeing every person and place, which you have ever known and loved for five years?" A year later he recalled times that he and Herbert had spent together: "It is necessary to be separated from all which one has been accustomed to, to know how properly to treasure up such recollections." To another friend he wrote in July 1834 "It is impossible not bitterly to regret the friends and other sources of pleasure, one leaves behind in England". By the time of his return these old friends had dispersed and Darwin was conscious that the solitary habits acquired on the Beagle might be difficult

to shed: Erasmus and London could provide him with a ready-made circle of friends and prevent him from slipping into a new isolation.¹⁴

Erasmus was in 1836 firmly fixed in London; after a decade of travels and temporary residences, he had, in January, taken a house in Marlborough Street, in which he had installed a make-shift laboratory. To him Charles naturally gravitated, especially since Erasmus's voice had long been raised in opposition to the idea of his younger brother becoming a clergyman: "I am sorry to see in your last letter that you still look forward to the horrid little parsonage in the desert", he wrote in August 1832, "I was beginning to hope I should have you set up in London in lodgings somewhere near the British Museum or some other learned place. My only chance is the Established Church being abolished, and in some places they are beginning to demand pledges to that effect....." Erasmus's bachelor status was important to Charles and in letters home he asked for news. In April 1832 Catherine wrote "Do you remember your prophecy you made to Erasmus? that you should find him tied neck and heels to E Wedgwood, and heartily sick of her....I am much amused at your prophecy, and I think it may possibly have a good effect, and prevent its own fulfillment." A year later the possibility of a match was still being canvassed. Reporting that Emma was staying in London, Caroline wrote "-I expect Erasmus will be a very attentive Cavalier to her and nobody

knows what will be the end of the drives in his Cab he will take her to and fro Clapham where the Hensleigh Wedgwoods live-". Charles retorted anxiously: "looking at things from a distance, they appear to be undergoing changes far faster than when living amongst them. Will Erasmus be married? all these gay doings with cab and horses portend something eventful." But Erasmus stayed single, and available as friend and companion should Charles choose to come and live in London. In March 1837 his younger brother gave up his lodgings in Fitzwilliam Street, Cambridge, for rooms close by those of Erasmus in Great Marlborough Street, London.¹⁷

For the first 18 months after the return of the Beagle, Darwin appears to have been content with his bachelorhood. Work was his priority, but in leisure moments he enjoyed the company of Erasmus's circle of friends and was a frequent visitor, too, at the Lyells' house, for social engagements as well as scientific discussion. Lyell affords a good example of the degree of integration that existed in the upper strata of metropolitan society, mixing as he did in political, literary, social and scientific circles. Years later Darwin could be scathing of Lyell's enjoyment of London's social life: "He was very fond of society , especially of eminent men and of persons high in rank; and this over-estimation of a man's position in the world, seemed to me his chief foible." From the start Darwin was sparing of his time, rejecting opportunities for parties and receptions on the

grounds of overwork or ill-health. He had a preference for small gatherings of close friends and there are few reports of his attending big social occasions. A letter to Henslow in March 1838, rejecting an invitation to a naturalists' dinner, is characteristic: "I should like to be with you very much, but I am tied firmly by the leg by the hundred and one details I find I incur with my Editorship of the Zoolog. Beagle's voyage. - I am moreover Goth enough to prefer paying you a quiet visit to meeting all the world at a great Dinner". Two months later he was writing to Caroline Wedgwood that "I am living very quietly, and have given up all society, - that is, going to evening parties, or indeed, to parties of any sort. - I find the change very pleasant.-" That family gatherings were excepted from this general renunciation is made clear by a letter of the same period to his sister Susan in which he describes "a very brilliant little party" at Erasmus's in the company of Harriet Martineau, Hensleigh and Fanny Wedgwood and Fanny's half-sister Mary Rich. If Darwin limited his social activities he did so by choice, confident in the knowledge that the doors of fashionable London were open to him.¹⁸

Darwin's adoption by London's social and intellectual elite was confirmed by his election to the Athenaeum Club on 21st June 1838. Formed in 1824 as a "place of rendezvous" for "literary men and artists", the rules for entry excluded anyone who had not achieved literary or scientific eminence

(judges, bishops and members of the Royal Academy were also eligible). The first general committee had included among others Hensleigh Wedgwood's father-in-law, Sir James Mackintosh, and Lyell's patron, the Marquis of Lansdowne. Lyell had himself been one of the earliest members of the Club and had assured Darwin as early as December 1836 that when a vacancy arose he would promote his candidature. In 1838 he was a member of the governing committee that decided on the election of forty new members: Darwin was one of the forty. He thoroughly enjoyed his membership of this illustrious body: within a short space of time he was dining there most days and Erasmus was driven to complain, "Charles is become quite an altered character, lounges about most of the day, and can hardly live out of the Athenaeum of which he is never tired of singing the praises."¹⁷

But Darwin's thoughts were turning to marriage. As with most things in his life, the decision to marry was taken deliberately and rationally; in April 1838 he drew up the first of two sets of notes on the pros and cons of matrimony. In this he concluded that, as against the freedom of work and of movement that he enjoyed in his single state, he must set the relative poverty of life as a family man and the restrictions on his travels which would limit his ability to undertake empirical research. If he married, financial pressures would entail leaving London and he would have to tailor his research to local facilities. As summer drew on

some of these fears eased: his father's assurance of continued financial support put his mind at rest on that score, and the planning of his trip to view the parallel roads of Glen Roy alleviated his anxieties about undertaking field work. The second set of notes was drawn up in July 1838, and possibly already had Emma in mind as projected bride. She was at that time making one of her regular visits to her brother Hensleigh and his family, recently returned to London after a six month sojourn at Maer. Now, though still regretting the inevitable curtailment of his social life that marriage would cause, he no longer felt that it would be necessary to leave London immediately, and the disadvantages of marriage were more than compensated by having on hand a "constant companion, (friend in old age) who will feel interested in one, object to be beloved and played with - better than a dog anyhow..."²⁰

At the beginning of August 1838, having stayed for two weeks with his father in Shrewsbury, Darwin proceeded to Maer to spend a few days with the Wedgwoods, where Emma had now returned. Back in London he responded to a letter from her, "remember I consider myself invited to Maer, the next time I come down into the country - in fact, I think I have been so often that I have a kind of a vested right so see me you will." It is difficult to avoid the conclusion that the ready availability of Emma had much to do with Darwin's decision to marry. The family history of the Wedgwoods and Darwins

reveals that intermarriages were not only anticipated but actively canvassed. Robert Darwin's father Dr Erasmus Darwin had, in collusion with Josiah I, arranged the marriage of Robert with Susan Wedgwood. Robert and Josiah II had done their best to foster the alliance between Caroline Darwin and Josiah's son Joe, an engagement between the two finally being announced in June 1837. Meanwhile Hensleigh Wedgwood had married his first cousin, Fanny Mackintosh, and his brother Harry had married another first cousin, Jessie Wedgwood. The possibility of a marriage between Emma and Charles's older brother Erasmus had been mentioned several times while Emma's older sister Fanny had been considered a suitable prospect for Charles; Charles's willingness to entertain this idea is suggested by the detailed account of Fanny's death in September 1832 sent by his sister Caroline: "I have been very minute in telling all particulars as I know how much interested you are for all the Wedgwoods and you did poor Fanny justice in liking her and valuing her goodness and excellent qualities."²¹

It came as no surprise to either family when Charles and Emma became engaged on November 11th 1838. Emma wrote to her aunt, Jessie Sismondi, "It is a match that every soul has been making for us, so we could not have helped it if we had not liked it ourselves." And Jessie, who had never liked Erasmus, replied: "I am grateful to [Charles] for saving you

from Erasmus. I was always afraid of that. I knew you would be a Mrs Darwin from your hands, and seeing Charles did not come on, which Fan [Allen] and I used to speculate on and expect in every letter from Maer, I began to fear it was Erasmus." Josiah II was also happy with the outcome, writing to Robert Darwin on the 15th November "I could have parted with Emma to no one for whom I could so soon and so entirely feel as a father and I am happy in believing that Charles entertains the kindest feelings for his uncle-father."²²

It would be wrong, however, to leave the impression that this was simply a marriage of convenience. Despite the predictable nature of the alliance, Darwin was eager for the marriage and the bride. The date of the engagement was marked "the day of days" in his diary and he reported the news to Lyell in these terms: "We are connected by manifold ties, besides on my part by the most sincere love and hearty gratitude to her for accepting such a one as myself." Emma was equally enthusiastic; her life at Maer afforded scant amusement. For the previous four years she had shared with her older sister Elizabeth the task of nursing their invalid mother; she was dependent on visitors to Maer to provide some relief and had enjoyed Charles's summer visit. She may then have thought of the possibility of marrying him: "I was very happy in his company, and had the feeling that if he saw more of me, he would really like me", she wrote to Jessie Sismondi; he was "so affectionate, and so fond of Maer and

all of us, and demonstrative in his manners... the most open, transparent man I ever saw, and every word expresses his real thoughts...[he] possesses some minor qualities that add particularly to one's happiness, such as not being fastidious, and being humane to animals."²³

The engaged couple decided to settle in London, despite Emma's evident reluctance. "Let us make the most of London, whilst we are compelled to be there," Charles wrote a fortnight after their engagement, "the case would be different if we were deciding for life." Emma undoubtedly believed that Charles shared her distaste: following his first post-Beagle visit to Maer she recorded that "He seems to have nearly settled in favour of living at Cambridge, which is a pity for Erasmus' sake; but I should feel sure that Charles would like Cambridge best, as he has particular spite to London I believe." Henslow and W. D. Fox also learned of his dislike of "this dirty, odious London", and, refusing an invitation to Maer for the summer of 1837 on the grounds of the need to press on with his Journal, Charles wrote to Elizabeth Wedgwood:

To write a book I do not doubt is a very grand thing, but there ought to be a great deal of satisfaction from some source to repay one for all one loses. What a waste of life to stop all summer in this ugly Marlborough Street, and see nothing but the same odious house on the opposite side, as often as one looks out.

In September 1838 he wrote with heavy irony to Lyell, on holiday in Scotland:

Remember, what I have often heard you say - the country is very bad for the intellect - the Scotch mists will put out some volcanic speculations - you see I am affecting to become very cocknefied, and to despise the poor country folk, who breath fresh air instead of smoke, and see the woods and fields instead of the brick-houses in Marlborough Street, - the very sight of which I confess I abhor.²⁴

The complaints Darwin made against London, of dirt, of noise, of fog, were familiar among contemporary London intellectuals. Thomas Carlyle was notorious for his vehemence against the place he had made his home, and yet its vibrancy and its intellectual tolerance were indispensable to his work. Of his first visit in 1824 he had written:

Of this enormous Babel of a place I can give you no account in writing: it is like the heart of all the universe; and the flood of human effort rolls out of it and into it with a violence that almost appals one's very sense.

Carlyle articulated both the repulsion felt by Dickens - "Smoke lowering down from chimney-pots making a soft black drizzle, with flakes of soot in it as big as full-grown snowflakes - gone into mourning, one might imagine, for the death of the sun." - and the irresistible attraction of the city, which had made Charles Lamb exclaim a half-century earlier that "I often shed tears in the motley Strand from fulness of joy at so much Life." Darwin must have known something of this attraction, for it is difficult to see why else he should have brought a reluctant Emma to the capital; initially, perhaps, the choice of London was dictated by Darwin's sense of professionalism: to Fox he wrote

It is a sorrowful, but I fear too certain truth, that no place is at all equal, for aiding one in Natural History pursuits, to this odious, dirty, smokey town, where one can never get a glimpse at all that is worth seeing in nature.²⁵

But writing again in October 1839 his mood had changed: "if one is quiet in London, there is nothing like its quietness - there is a grandeur about its smoky fogs, and the dull distant sounds of cabs and coaches"; by this time Darwin's reputation as a geologist was established, and his work on the Geology of the voyage, whilst incomplete, could have been pursued elsewhere. In truth Darwin was less antipathetic to London than he pretended, even writing of it to Henslow as "most delightfully tranquil" in autumn 1837 and assuring Caroline that "the ennui and rain of Maer has effected a thorough cure" for his taste for the country. As late as February 1840 he was sympathising with FitzRoy over the evils of commuting: "I should think you would find a house near Town much pleasanter; for my own part, I do not think I shall ever venture out even as far as a suburban cottage." Darwin stayed in London because he found it stimulating. The decision to leave was made during the protracted illness of 1841 when it became clear that his health would effectively cut him off from this source of stimulation. During this period Darwin despaired of ever working normally again: "it has been a bitter mortification for me", he wrote to Lyell, "to digest the conclusion, that the "race is for the strong" - and that I shall probably do

little more, but must be content to admire the strides others make in Science." Only the negative aspects of London life now remained, and so the preference of his wife and the interests of his children dictated his departure.²⁴

In January 1839 it was Emma's task to make the best of things. Married at Maer by her cousin the Rev. John Allen Wedgwood on the 29th January, she and Charles returned immediately to "Macaw Cottage", a house Charles had rented in Upper Gower Street. Emma had few social ambitions, her appetite for company was satisfied within the close-knit family circle. In addition to personal contact with her brother Hensleigh and his family, she maintained a frequent correspondence with her sister Elizabeth at Maer and with her aunt, Jessie Sismondi. Catherine Darwin had reported of her stay in Edinburgh in February 1837 that "We hear that Emma says she would have preferred the learned season at Edinburgh to the gay one." Emma found dinner parties with Charles's friends tedious; of one given for the Henslows and the Lyells, she wrote "notwithstanding these two dead weights, viz., the greatest botanist and the greatest geologist in Europe, we did very well and had no pauses." Yet Emma was no narrow-minded country bumpkin. She was well-educated, widely-read, and had travelled in Europe: she had spent some months in school in Paris, had visited Italy in 1825 and stayed with the Sismondis in Geneva in 1826. She enjoyed the theatre, and maintained an interest in politics and social questions. Her

daughter, Henrietta Litchfield, recorded that "she once said to my sister that when she married she had resolved to enter into my father's tastes and thought she would be able, but found it impossible"; but she engaged in them sufficiently to comment on the Essay of 1844, questioning not only Darwin's phraseology, but his reasoning as well. Her feigned indifference may have had more to do with her personal conviction that Darwin's work aggravated his religious doubts than with a genuine lack of interest. Of the Descent of Man, 1871, she commented "I think it will be very interesting, but that I shall dislike it very much as again putting God further off". Emma's dislike of London arose not from anti-intellectualism but from a preference for a quieter style of life.²⁷

In addition to a natural disinclination for society, Emma was handicapped by almost immediately becoming pregnant, (their first child, William Erasmus was born on the 27th December 1839, just eleven months after the wedding. Annie was born fifteen months later and Emma gave birth a third time in September 1842 immediately after her move to Down.) Physically she was not strong and Darwin's health, too, was causing anxiety. In October 1839 he wrote to W. D. Fox: "We have given up all parties, for they agree with neither of us..." Such professions however tend to suggest a greater degree of isolation than in fact existed, and in this context the Darwins' family connections are important. From the

outset of their married life, close ties were maintained with Erasmus and with Fanny and Hensleigh; all were frequent visitors in their home and in February 1840 the Wedgwoods moved to within a few doors of Macaw Cottage. Emma told Jessie Sismondi, "We find it a constant pleasure having them so near. They often walk in to drink tea with us and vice versa." The Wedgwoods and Erasmus were closely involved in the intellectual life of London: through them Charles could stay in touch with the intellectual avant garde.²⁸

As well as encouraging a quieter lifestyle, Emma introduced a more profoundly religious outlook on life than Charles had been exposed to in his own family. The influence of his mother's Unitarianism had been removed by her early death, and Robert Darwin was careless of religious observance. Although Emma's parents were not overly concerned with the substance of religion, their children, taught a Unitarian creed while attending services of the Church of England, took the matter more seriously. "I am rather afraid of Evangelicalism spreading amongst us," Josiah wrote in 1825, "though I have some confidence in the genuine good sense of the Maerites for keeping it out, or if it must come, for having the disease in a very mild form." Her father's indifference was a source of great sadness to Emma. In the 1830s she hoped that a visit to Maer by the Rev. Alexander Scott, founder of the Holy Catholic Apostolic Church, with whom Hensleigh and Fanny had become acquainted, might help:

What would make me most glad to have him here would be the hope that it might be a means of leading my father's mind to religious subjects, which is the one thing in the world I am most anxious about, which would make me most happy, and which I feel in the common course of things is unlikely to be brought about... For years and years it has been the one anxious spot in my mind, and I have felt so helpless and powerless to do anything but pray - hoping and hoping that it is not possible God should finally leave a soul so full of all virtues, uprightness, purity, simple-mindedness, love of all good, humanity, unselfishness - without communicating to it the love of himself, and a desire to know his truth.

In very similar terms she addressed Charles in 1861:

When I see your patience, deep compassion for others, self-command and above all gratitude for the smallest thing done to help you, I cannot help longing that these precious feelings should be offered to Heaven for the sake of your daily happiness.

Darwin preserved this letter, writing at its end, "God bless you.

C.D. June 1861 "27

3) Work and Health

Soon after Darwin's marriage, the illness which had already begun to afflict him became more pronounced. The nature and quality of this illness has been much debated, but whatever conclusions are adopted, it cannot be doubted that it dominated much of his life. The most distressing symptoms were sickness and associated stomach cramps which during acute phases of illness would give him little respite for days on end. Theories that this illness was physiological, attributable perhaps to a disease acquired during his South American expeditions have largely been discounted in favour

of theories that the illness was a response to stress. Darwin himself believed that overwork induced his attacks, but recent writers have suggested that the crucial stress factor was the guilt and fear engendered in Darwin by his acceptance of the materialistic and mechanistic world view that was in his eyes the corollary of the theory of evolution by natural selection. Evidence for this view may be found in comments of Darwin's, like this one written in his notebook in spring 1838:

This multiplication of little means and bringing the mind to grapple with great effect produced is a most laborious and painful effort of the mind (although this may appear an absurd saying) and will never be conquered by anyone (if has any kind of prejudices) who just takes up and lays down the subject without long meditation.³⁰

In this interpretation, his feelings of guilt were a consequence of his loss of faith, while his fear was a rational one in the light of contemporary examples of persecution of heretics: the French naturalist Buffon was one such victim, Richard Carlile, notorious infidel, imprisoned from 1819-25, was another, and Darwin himself witnessed the suppression of a minute recording the presentation of heterodox views at a Plinian Society meeting at Edinburgh in 1827. Ralph Colp's detailed analysis of Darwin's illness concluded that evolutionary theory was at all times an important contributory factor and that in the crucial year of September 1837 to August 1838 his illness was caused "by the psychic stress of his thinking evolutionary thoughts." Howard

E Gruber, in Darwin on Man explained that by incapacitating Darwin from further work, the illness released him from the desolation of the world view he had created. Stephen Gould in Ever Since Darwin followed Gruber, agreeing that Darwin's fear of a hostile reaction to the materialistic implications of his theory was a major reason for the delay in publishing.³¹

On a number of occasions, however, the notebooks reveal that Darwin took real pleasure in his iconoclasm. The definitive "Origin of man now proved - Metaphysics must flourish. - He who understand baboon would do more toward metaphysics than Locke." of August 16th , and the deliberately provocative exclamation a fortnight later - "The Devil under form of Baboon is our grandfather!" - and "If all men were dead then monkeys make men,. - Men make angels. -", these extracts suggest that any spiritual or social anxiety was balanced by a fair degree of intellectual self-confidence. One difficulty with the "guilt and fear" hypothesis is that it conflates the issues of Darwin's subjective response to the metaphysical implications of his thought with his objective assessment of possible public hostility to its presentation. It exaggerates the threat to Darwin by failing to appreciate the complex nature of society's response to heterodoxy. Two further objections are that it reads too much significance into his illness, by failing adequately to take account of the family history of

ill-health, and that it depends on a chronology of illness that, during the London years at least, does not match the chronology of his species speculation.³²

Objectively, Darwin had little to fear from society, and the evidence of anxiety on this score is not strong. In the C notebook Darwin commented "Mention persecution of early Astronomers," but this was in the context of a discussion about the extent to which a scientist should reveal novel ideas: "chief good of individual scientific men is to push their science a few years in advance only of their age, (differently from literary men,) must remember that if they believe and do not openly avow their belief they do as much to retard as those whose opinion they believe have endeavoured to advance the cause of truth." It is probable that Darwin had discussed this matter with Lyell whose cautious attitude is exemplified by his remark made to the reviewer of the 1st volume of his Principles:

If I have said more than some will like, yet I give you my word that full half of my history and comments was cut out, and even many facts; because either I, or Stokes, or Broderip, felt that it was anticipating twenty or thirty years of the march of honest feeling to declare it undisguisedly.³³

A study of contemporary responses to infidelity does suggest that when wisely handled by someone of high social standing there was little to fear in the sense of social excommunication. Infidelity was punishable only in so far as

it was considered to be seditious or blasphemous: if its author addressed himself to the labouring population he was liable to prosecution, for, in the words of Lord Wilberforce, "The high and noble may be restrained by honour; but religion only is the law of the multitude." Thus the printer of a cheap edition of Tom Paine's Age Of Reason was prosecuted in 1797, while Godwin's Enquiry Concerning Political Justice, at three guineas a piece, was allowed to circulate freely. Richard Carlile's imprisonment was similarly politically motivated. Militant infidelity was one path to becoming a social outcast, personal immorality was another: W. J. Fox's increasingly deistic utterances were tolerated by his broad-minded Unitarian Congregation in the South Place Chapel, but many defected in 1834 because of the irregularity of his private life and his advocacy of divorce. The lessons for a potential heretic were clear: address your views to the educated public only and avoid immorality . Heterodoxy required a strategy for minimising hostility, and, in the context of a man of science, for preserving a professional reputation. This latter point was brought home to Darwin by the furore over the publication of the Vestiges of the Natural History of Creation in 1844: Darwin's beliefs demanded a decision about values. Was the immediate publication of his theory so important to him that he would risk all he had achieved, or should he bide his time?³⁴

Darwin chose the latter course, but Gruber believes that

Darwin's fears of external retribution were matched by inner feelings of guilt and despair. He offers as evidence Darwin's narration of a dream in a notebook entry for September 21st 1838, the period when his theory of evolution was crystallising. In the dream Darwin witnessed an execution: Gruber interprets the sequence as meaning that Darwin saw himself as God's executioner, offering an amoral universe based on war and profligacy in place of the vision of harmony and order that was the legacy of natural theology. Colp follows Gruber, suggesting that it "was perhaps a dream about his fear of being punished for holding transmutationist ideas and his determination to be courageous in upholding them." However, Darwin recorded this dream in the course of a discussion of the nature of belief: given the controversial nature of the interpretation of dreams, its significance must remain conjectural. This is not to suggest that Darwin was untroubled by the effect his heterodox views might have upon his audience: the tentative manner of his subsequent revelations to Hooker and others indicate his fear that the confession of transmutation would cost him respect and professional esteem. But during the period when he developed his ideas it seems clear that anxiety on this count did not cloud the pleasure he took in his intellectual radicalism.³⁵

The use of Darwin's illness as evidence of the stress occasioned by his transmutationist thinking possibly invests that illness with undue significance. The likelihood of its

being a general stress response, rather than specifically associated with species speculation, is enhanced by viewing it in the context of the family history of debility. Emma, like Charles, was frequently unwell; their uncle, Thomas Wedgwood had suffered chronic ill-health leading to opium dependency and an early death in 1805. His sister, Susan, Charles's mother, was always invalidish, although her premature death in 1817 came unexpectedly, probably as a result of peritonitis; Charles's brother Erasmus was considered sufficiently sickly to justify him in a life of leisure. Emma meanwhile had received practical training in tending the sick during the long years of her mother's illness. Even before their marriage she was reassuring Charles that she was content to be cast in the role of nurse:

I am sure it must be very disagreeable and painful to you to feel so often cut off from the power of doing your work and I want you to cast out of your mind all anxiety about me on that point and to feel sure that nothing could make me so happy as to feel that I could be of any use or comfort to my own dear Charles when he is not well. If you knew how I long to be with you when you are not well! You must not think that I expect a holiday husband to be always making himself agreeable to me and if that is all the "worse" that I shall have it will not be much for me to bear whatever it may for you. So don't be ill any more my dear Charley till I can be with you to nurse you and save you from bothers.

With this family history of ill-health it is not surprising that a stout constitution was considered the exception rather than the rule, nor that suffering was looked upon as a state to be endured, rather than to be overcome. Recalling her own childhood, Charles and Emma's granddaughter, Gwen Raverat, wrote:

The trouble was that in my grandparents' house it was a distinction and a mournful pleasure to be ill. This was partly because my grandfather was always ill, and his children adored him and were inclined to imitate him; and partly because it was so delightful to be pitied and nursed by my grandmother...the attitude of the whole Darwin family to sickness was most unwholesome. At Down, ill health was considered normal.³⁶

By setting Darwin's illness in the context of a family history of chronic ill-health, the difficulty of ascribing the cause of that illness to the particular stress of his species speculation becomes apparent. Neither Charles nor Emma had any real expectation of good health. Darwin himself was convinced that pressure of work induced his attacks and that the choice before him was to live with pain or to give up work. His brother Erasmus, faced with a similar choice, chose not to work. But that solution was unacceptable to Charles: as he wrote to Hooker in 1857, "I would sooner be the wretched, contemptible invalid, which I am, than live the life of an idle squire."³⁷

The suggestion that Darwin's illness was a general stress response gains support from a study of the chronology of his attacks during his years in London, when illness was sporadic rather than chronic. Darwin's post-Beagle health problems began in September 1837 as he was completing his Journal of Researches: "I shall always feel respect for every one who has written a book," he had told W. D. Fox in July, after dispatching the manuscript, "let it be what it may, for

I had no idea of the trouble which trying to write common English could cost one. - And alas there yet remains the worst part of all correcting the press." He was unwell again the following May and June, precipitating his departure for Edinburgh to view the Parallel Roads of Glen Roy in the belief that a change of scene had curative value. Sickness returned in the Autumn of 1838, ~~after~~ the most intensive period of work on species was complete, when he settled down to the daunting task of writing up the Geology of the voyage. He was more or less continuously unwell from November until his marriage in January 1839, a period of great stress in his personal life.³⁰

In the spring of 1839 and again in August, Darwin made visits to Shrewsbury and Maer, in both cases coinciding with renewed attacks. From the beginning of 1840 his illness gave him scarcely any respite for eighteen months, being particularly severe during the first six months of 1841. Nevertheless that summer there was some improvement and on July 26th 1841 Darwin noted in his Journal, "commence coral work after more than 13 months interval." This work he finally finished in May 1842, writing despondently in his Journal: "corrected last proof of coral volume. I commenced this work 3 years and 7 months ago. Out of this period about 20 (besides work during Beagle's voyage) months has been

spent on it, and besides it, I have only completed the Bird part of Zoology: Appendix to Journal - Paper on Boulders and corrected papers on Glen Roy and Earthquakes, reading on Species and rest all lost by illness." By this time Darwin had completed the major stages of his theoretical speculation on species, nor does the writing of the Sketch of 1842 appear to have precipitated a medical crisis.³⁹

What remains to be explained is the frequent juxtaposition in Darwin's Journal of references to ill-health and references to species speculation: May 1st 1838 - "Unwell, working at Geology. as named and "Species""; June 1838 - "some little Species theory, and lost very much time by being unwell"; April 1839 - "Maer visit. some reading connected with species, but did very little on account of being unwell"; December 24th 1839 - "became unwell, and with the exception of two or three days remained so till the 24th of February. In this interval read a little for Transmutⁿ theory, but otherwise lost these whole months". With entries such as these it is not surprising that a causal connection between health and species work has been proposed.⁴⁰

When read in conjunction with other entries relating to species work, however, a different picture emerges. The first reference, confirming the opening of the first transmutation notebook is in July 1837 and marks the interval between

sending the draft of the Journal of Researches to the printers and correcting the proofs. The next, in February 1838, coincides with the completion of the section of the geology relating to St Helena and small islands in the Atlantic. On July 13th 1838 Darwin "opened note book connected with Metaphysical Enquiries": he was on holiday at Shrewsbury at the time. The month of September was devoted to species work: Darwin had completed his paper on the parallel roads on the 6th of that month. Even then he was concerned about diverting time from his other work: he wrote to Lyell on September 13th

I have lately been sorely tempted to be idle, that is as far as pure geology is concerned, by the delightful number of new views, which have been coming in thickly and steadily on the classification and affinities and instincts of animals - bearing on the question of species - note-book, after note-book has been filled, with facts, which begin to group themselves clearly under sub-laws.

During his protracted illness 1840-1 he was unable to continue with his coral volume at all, but "when well enough did a good deal of species work." With the coral volume finally finished on May 6th 1842 he left London and "During my stay at Maer and Shrewsbury, 5 years after commencement wrote pencil sketch of my species theory."⁴¹

From this survey it is apparent that species work, rather than occasioning illness, was taken up by Darwin when ill-health precluded his continuation with his career work. Darwin was obsessive about this, rejecting invitations from

friends and family and even foregoing the pleasure of scientific gatherings if he felt it would delay his programme. There were but three sets of conditions in which he would set it aside to pursue his work on species: firstly, when he felt too unwell for his current project, secondly when he reached an interval between the conclusion of one project and the start of another, and finally when he was on holiday, usually during visits to Maer and Shrewsbury, (the latter frequently arranged to coincide with convenient breaks in his schedule of work).⁴²

4) Summary

The Darwin who settled in Great Marlborough Street in March 1837 was enthusiastic for London and all it had to offer; he revelled in his private challenges to scientific orthodoxy, matching as they did the challenges to social and religious orthodoxy being made by his closest friends. His much-vaunted dislike of London was no different from that voiced by many members of London's intelligentsia who submitted to the evils of the place rather than forego its intellectual stimulation. In moving to London, Darwin consciously adopted the role of professional geologist, a role which he pursued energetically in the ensuing years. The priority he gave to his career explains the time lapse between his first explicitly transmutationist statement in the Red Notebook in March 1837 and the opening of the first notebook on the subject some four months later. From that

time he devoted his spare time to his speculative work and embarked on an ambitious programme of reading to support his reflections, but he did not allow himself to be diverted from his orthodox work. Because of the prime importance to Darwin of establishing his reputation as a geologist, and because species theory could not contribute to this end, he considered time devoted to species speculation as time "frittered away" whilst he was being "very idle". Thus, although the major part of his theorising was complete by the winter of 1838-9, it was not until June 1842, with the coral volume complete and Darwin on holiday in Shrewsbury that the Sketch was written.⁴³

In September 1842, the Darwins left London to take up residence in Down House. There, Darwin continued to work on the Geology of the voyage in accordance with his original timetable. But the writing of the Sketch symbolised a new commitment to species theory: henceforth it formed a part of his official agenda.

NOTES TO CHAPTER 2

- 1 See Colp, 1977, Gruber, 1981, and Moore, 1985.
- 2 The choice of a clerical career was not affected by Dr Darwin's religious belief. There were only three choices open to a son of the professional middle class: law, medicine and the Church (Heyck, 1982, p. 21, and Moore, 1985, pp. 441-2). Darwin was scathing of his Cambridge education (Autobiography p. 32), influenced perhaps by the university reform movement (Heyck, 1982, pp. 161-183). The Canary Isles project was well advanced when the Beagle option arose: the decision to defer the clerical career had already been taken (Porter, 1985, p. 977); Barlow, ed., 1933, p. 14.
- 3 Henslow put Darwin's name forward for the Beagle appointment, testifying to his faith in his qualities as a gentleman companion (FitzRoy's requirement) and as a naturalist (the requirement of George Peacock in whose gift the appointment was). Next to his family, Henslow was Darwin's main correspondent during the voyage and remained a confidant in the ensuing years. He was one of the first to be informed about Darwin's species speculation: Darwin to Henslow, November 1839, Correspondence, 2, 238. Darwin to Henslow, 18 May - 16 June 1832, Correspondence, 1, 238; Sedgwick to Darwin, 4 September 1831, Correspondence, 1, 137.
- 4 Fox obtained his first curacy at Epperstone in

- Nottinghamshire in January 1831. He maintained his interest in natural science, attending the BAAS at Cambridge in summer 1833. He married in 1834 and had a daughter in January 1836. Darwin and Fox met rarely, but corresponded frequently: Fox was asked to supply information and was told of Darwin's "prime hobby" of species research (Darwin to Fox, 15 June 1838, Correspondence, 2, 92). Darwin referred to Fox as leading a "White of Selbourne life" (Darwin to Fox, 25 October 1833, Correspondence, 1, 345). Darwin to Fox, 6 November 1836, Correspondence, 1, 516: for Darwin's appreciation of his debt to Henslow, see Correspondence, 2, 54.
- 5 See, for example, Darwin to Fox, November 1832, Correspondence, 1, 286; Catherine Darwin to Darwin, July 1832, Correspondence, 1 254.
- 6 Moore, 1985, p. 455; Susan Darwin to Darwin, February 1836, Correspondence, 1, 489.
- 7 Autobiography p. 25; Darwin never seems to have doubted that his father would meet his bills (see, for example, Darwin to Henslow, 4-11 October 1831, Correspondence, 1, 173).
- 8 Darwin to Susan Darwin, 23 April 1835 and Darwin to Henslow, 28 January 1836, Correspondence, 1, 448, 484.
- 9 Sulloway, 1985, pp. 121-155. Mrs Lyell, ed., 1881, I, 371; Lyell to Sedgwick, 6 December 1835, *ibid.*, p. 459. Lyell's Presidential Address in February 1836 to the Geological Society noted Darwin's work on the Beagle

(Wilson, 1972, p. 434).

- 10 Lyell to Dr Fleming, 1835, quoted in Wilson, 1972, pp. 411-2. To Rudwick's definition of professionalism, in the context of the 1830's, as "a strong commitment to high, collectively held standards of work" (Rudwick, 1982, p. 189), might be added the ambition for science to achieve the social status of the established middle class professions of law, the Church, and medicine. For Lyell's complaints against the combination of posts in the Church and science, see Lyell, 1845, I, 303, and Lyell to Dr Fleming, 6 February 1856, Mrs Lyell, ed., 1881, II, 208; on his fears for religion through an unwise alliance with science, see his Kings College lecture, 1832, in Rudwick, 1976, pp. 150-1. Darwin expressed the fears of Lyell and others for the fate of Henslow's botanical work in his letter to Henslow, January 1843, Correspondence, 2, 348.
- 11 On Darwin's impatience with zoologists, see Darwin to Henslow, 30 October 1836, Correspondence, 1, 514: the Zoological Society was emerging from a period of unsuccessful radical challenge to the conservative leadership (Desmond, 1987, chapter 2). Leadership fears of transmutationist sentiment among its membership led the society to resist theoretical discussion and insist on a more rigid empiricism than was demanded by the

- Geological Society (Pancaldi, 1985, pp. 260-1). On the Linnean Society, see Darwin to Henslow, 1 November 1836, Correspondence, 1, 515. Lyell warned against office-holding in his letter to Darwin, 26 December 1836, Correspondence, 1, 532; for Darwin's doubts and reluctant acceptance, see Darwin to Henslow, 14 October 1837 and 21 January 1838, Correspondence, 2, 57 and 69.
- 12 Rudwick, 1982, pp. 193-198.
- 13 The Journal had been delayed to allow FitzRoy's work to be published first; on the reaction of Humboldt and Owen, see Correspondence, 2, 199 and 218; Autobiography pp. 68-9. On the role of zoologists in his speculation, see Herbert, 1974, pp. 241-4, Rudwick, 1982, p. 189, Porter, 1985, p. 999. Darwin to Henslow, 4 November 1837, Correspondence, 2, 54.
- 14 Autobiography, p. 48; Darwin to Lyell, 14 September 1838, Correspondence, 2, 105.
- 15 Henslow to Darwin, 20 November 1831, Correspondence, 1, 183.
- 16 Brent, 1981, p. 440; Autobiography, p. 43. Darwin to Herbert, June 1832 and June 1833, Correspondence, 1, 241 and 320; Darwin to Whitley, 23 July 1834, Correspondence, 1, 397; see also Darwin to Emma Wedgwood, 20 January 1839, Correspondence, 2, 166.
- 17 Susan Darwin to Darwin, 12 February 1836, Correspondence, 1, 489; Erasmus Darwin to Darwin, 18 August 1832, Correspondence, 1, 259; Catherine Darwin to Darwin, April 1832, and Caroline Darwin to Darwin, 7 March 1833, Correspondence, 1, 229 and 302; Darwin to

- Catherine Darwin, July 1834, Correspondence, 1, 394.
- 18 Autobiography, p. 59; there are several references to Babbage's "glorious soirees" (Martineau, 1983, 1, 355) in Darwin's letters, indicating his pleasure in the invitations, despite his refusal of them: see, for example, Darwin to Caroline Darwin, 27 February 1837, Correspondence, 2, 8; and on other occasions he solicited invitations for his relatives: Correspondence, 2, 171, 175, 223, 268. Darwin to Henslow, 26 March 1838, Darwin to Caroline Wedgwood, May 1838, and Darwin to Susan Darwin, 15 May 1838, Correspondence, 2, 79, 85, 86.
- 19 Ward, 1926, pp. 9, 19. Lyell to Darwin, 26 December 1836, Correspondence, 1, 533; Darwin to Broderip, August-December 1838, Correspondence, 2, 94; Erasmus Darwin to Fanny Wedgwood, 2 September 1838, Keele, W/M 227.
- 20 Correspondence, 2, 443-5 and Moore, 1985, pp. 453-6.
- 21 Darwin to Emma Wedgwood, 7 August 1838, Correspondence, 2, 95. Caroline Darwin to Darwin, September 1832, Correspondence, 1, 269.
- 22 Emma Wedgwood to Jessie Sismondi, 15 November 1838, Emma Darwin, II, 6; Jessie Sismondi to Emma Wedgwood, 23 November 1838, Wedgwood, 1980, p. 233; Josiah Wedgwood to Dr Darwin, 15 November 1838, Correspondence, 2, 119.
- 23 Darwin to Lyell, 12 November 1838, Correspondence, 2, 114; Emma Wedgwood to Jessie Sismondi, 15 November 1838,

- Emma Darwin, II, 5-6.
- 24 Darwin to Emma Wedgwood, 27, November 1838, Correspondence, 2, 129; Emma Wedgwood to Fanny Wedgwood, 21 October 1836, Emma Darwin, I, 272: Emma's older sister had come to the opposite conclusion, "I perceive that he rather skips over his residence at Cambridge and looks forward to settling in London with the most pleasure" (Elizabeth Wedgwood to Hensleigh Wedgwood, 16 November 1836, Correspondence, 1, 520), Darwin to Henslow, 30 October 1836, Correspondence, 1, 512; Darwin to Fox, 18 February 1837 and Darwin to Jenyns, 10 April 1837, Correspondence, 2, 5 and 16. Darwin to Elizabeth Wedgwood, 28 August 1837 and Darwin to Lyell, 14 September 1838, Correspondence, 2, 40 and 105-6.
- 25 Carlyle to Alexander Carlyle, 14 December 1824, Jennings, 1985, p. 165 and see Sartor Resrtus, p. 13; the extracts from Bleak House and from Lamb's letter to Wordsworth, 30 January 1801 are in Jennings, 1985, pp. 263, 115. Darwin to Fox, 12 March 1837, Correspondence, 2, 11.
- 26 Darwin to Fox, 24 October 1839, Darwin to Henslow, 19 November 1837, Darwin to Caroline Wedgwood, 27 October 1839 and Darwin to FitzRoy, 20 February 1840, Correspondence, 2, 234, 60, 237, 254-5. Darwin to Lyell, 6 July 1841, Correspondence, 2, 298.
- 27 Catherine Darwin to Darwin, 18 February 1837,

- Correspondence, 2, 5; Emma Darwin to Elizabeth Wedgwood, 2 April 1839, Emma Darwin, II, 41; *ibid.* p. 48; Colp, 1986a, pp. 19-20; Emma Darwin, II, 196.
- 28 Darwin to Fox, 24 October 1839, Correspondence, 2, 234; Emma Wedgwood to Jessie Sismondi, 7 February 1840, Wedgwood, 1980, p. 236. In its most acute phases Darwin's illness cut him off even from family: "My idiosyncrasy making me detest the sight of all friends and relatives has caused me to see scarcely anything of Erasmus," he wrote to Caroline Wedgwood on 27 October 1839 (Correspondence, 2, 236), but the acute phases, at least until 1841, were relatively short-lived.
- 29 Josiah Wedgwood to Bessie Wedgwood, 30 March 1825, Emma Darwin, 1904, I, 224: in his youth Josiah II had been a disciple of Coleridge (see chapter 4). Emma Wedgwood to Hensleigh Wedgwood, 21 April 1835/7, Keele, W/M 226. Emma's letter to Charles is in Emma Darwin, II, 175.
- 30 Q 75. The theory of physiological illness was that favoured by scientist historians of science (see, for example, De Beer, 1963, p. 116), but has been discounted by Colp, 1977, p. 129. Pickering, 1974, suggested that Darwin suffered from Da Costa's syndrome, cf. Colp, 1977, p. 105. For Darwin's self-diagnosis that "the noddle and the stomach are antagonist powers", see Darwin to Caroline Wedgwood, May 1838, Correspondence, 2, 85.
- 31 Moore, 1985, p. 452; Colp, 1986a, p. 10; Colp, 1977, p. 18; Gruber, 1981, p. 246; Gould, 1978, p. 24.

- 32 M 84; M 123; B 169.
- 33 Q 123: used both by Gruber, 1981, p. 40, and Colp, 1977, p. 17; Lyell to Poulett Scrope, 14 June 1830, Mrs Lyell, ed., 1881, I, 271. That Lyell was aware of the dangers implicit in such a strategy is clear from his quoting of Mill in his *Scientific Journal*, 1859: "The person who has to think more of what an opinion leads to than of what is the evidence of it, cannot be a philosopher or a teacher of philosophers." (Wilson, ed., 1970, p. 289; Darwin received a similar prompting to self-censorship in his private lie from his father (Autobiography, p. 55).
- 34 See Desmond, 1987, chapter 2 and Budd, 1977, chapter 1. Sir Robert Peel defended the blasphemy trials of the 1820s on the grounds that blasphemers sought to "deprive the lower classes of their belief in the consolation of religion" (Toohey, 1987, p. 319.)
- 35 M 143-4, and see Gruber, 1981, pp. 43-4 and Colp, 1986a, p. 11 and *passim*.
- 36 On Darwin's medical history and that of close relatives see Colp, 1977 and Wedgwood, 1980, pp. 101-2 and 116-130. Emma Wedgwood to Darwin, 30 December 1838, Correspondence, 2, 150; Raverat, 1952, pp. 121-2.
- 37 Darwin to Hooker, Colp, 1977, p. 60. Porter, 1985, p. 993, suggests that the impact of Darwin's illness has been exaggerated.

- 38 Darwin's Journal entry for 6 May 1842, Correspondence, 2, 435, and see Darwin to Emma Darwin, 9 May 1842, Correspondence, 2, 318.
- 40 Darwin's Journal, Correspondence, 2, 431-435.
- 41 Ibid.; Darwin to Lyell, 14 September 1838, Correspondence, 2, 107.
- 42 Darwin wanted to attend the BAAS, but, "if it delays my book a week nothing shall induce me to go" (Darwin to Henslow, 16 August 1837, Correspondence, 2, 37); he refused invitations to Maer and to the Henslows for the sake of his work: Correspondence, 2, 40, 69.
- 43 Journal entries for 13 July 1838 and 14 September 1838, Correspondence, 2, 432.

ERASMUS AND FRIENDS

Once returned to England, Darwin embarked on a reading programme which embraced philosophy, psychology and history. The ideas he gained from his reading could be tested in conversation with their authors or critics as he moved easily in London intellectual society. This society was small and remarkably heterogeneous; different circles existed within it, literary, political, scientific, but these were overlapping, with fluid boundaries, rather than exclusive, so that access to diverse interests and opinions was readily available. But the demands of his professional career left him with little time: for companionship, therefore, he relied primarily on the ready-made circle of friends comprising his brother Erasmus, Fanny and Hensleigh Wedgwood, Harriet Martineau and Thomas Carlyle. Not one was a Londoner, though each in the 1830's made London a home, and as a microcosm of the wider intellectual society they could provide for Darwin a distillation of contemporary opinion, at the least possible cost to him. "Such society," wrote Darwin, following a party at Erasmus's house at which the Wedgwoods and Carlyles were present, "I think, is worth all other and more brilliant kinds many times over."¹

His involvement with these friends was greatest during

the most creative phase of his species speculation. They helped to legitimise and give direction to his researches, whilst conferring upon him the protection afforded by the respect in which they were held by their contemporaries. They were involved in the task of redefining the role of religion in society and of reformulating social values in a period of bourgeois challenge to the status quo: it was in their company that Darwin resolved, or came to terms with, his personal metaphysical difficulties, and it was into the language he shared with them that he translated and made use of Malthusian population theory. For a variety of reasons Darwin, the other protagonists, and their biographers, have minimised these friendships which, in consequence, have largely been ignored by historians charting the development of Darwin's ideas. This chapter is therefore concerned with restoring them to centre stage.

1) Erasmus Alvey Darwin 1804-81

The man most responsible for forging and maintaining the links between the different personalities was Charles's older brother, Erasmus Alvey Darwin. Despite the five years difference in their ages the two had always been close friends: in Edinburgh in 1825 they had shared lodgings, as Erasmus completed and Charles began his medical studies; in 1831 it was Erasmus who travelled to Devonport to keep Charles company in the lonely, anxious days before the sailing of the Beagle. There was little correspondence

between the two during the voyage, but then Erasmus was a notoriously bad letter writer: as he wrote on August 18th, 1832,

if you do not hear very often from me it is you may be very sure not from want of love, but from indolence, and not very well knowing what to write about. London gossip will hardly carry to Shrewsbury much less across the Atlantic.

Darwin's letters to his sisters indicate that Erasmus's company was one of the things he most looked forward to: "I most earnestly hope Erasmus will not be wandering on the Continent about the time of the Beagle's return", he wrote in July 1836.²²

Erasmus was, like Charles, educated at Shrewsbury School and at Cambridge and Edinburgh Universities. He qualified as a physician in 1826, but, with the exception of some doctoring "among the Poor" of Shrewsbury, he did not practice. Ostensibly the reason was chronic ill-health, but he apparently never showed much intention of pursuing the career: his father's financing of his life in London, including the gift of cab and horse that made him so invaluable an escort, removed the necessity of earning a living. He made one effort at regular employment when, in November 1835, he took a post as clerk to Fanny's brother, Robert Mackintosh, a commissioner of public charities. His sister Susan was sceptical: "I don't expect that Eras will keep his place long, at least if it requires much work". Nor was his cousin, the future Emma Darwin, much impressed. She

wrote to her aunt, Jessie Sismondi, that "Erasmus is gone as his Clerk, which surprised us all that so idle a man should like to undertake it (viz. the Clerk), as it is supposed he will have a good deal to do. The girls at Shrewsbury tell him they are afraid the King will have a very bad bargain." The girls were right: three weeks later, Erasmus resigned the post. The reason for his departure was said to be his lack of legal training: in reality he had decided that "Literary leisure is better than work." The slow pace of his life amazed his younger brother: "for my own part, I would not care for a hundred years of life without a little more excitement."³

The portrait of Erasmus bequeathed by his family is of an idle, insubstantial, but agreeable man. Charles described him in his Autobiography as "kind-hearted; but his health from his boyhood had been weak, and as a consequence he failed in energy." According to his niece, Henrietta Litchfield, he had "an habitually patient and sad expression", while Charles's grand-daughter Nora Barlow claimed that he was seldom referred to without the epithet "poor dear old Ras". These impressions are of the elderly Erasmus, when, as Herbert Spencer wrote, he was "too feeble in health to display his powers"; his obituary in the Times in 1881 tried to present a more positive appraisal:

The elder brother had gifts which with a more energetic temperament, or, what is often the same thing, better health, might have won for him personal distinction, and might have made him conspicuously useful to the

world at large. As it was they enlivened the society of his friends, and with his kindly and cheerful temper promoted the happiness of the small circle in which he lived. Perhaps, when the diaries and recollections and letters of the notable persons who were his contemporaries are given to the world, some clear image of him may be obtained. He was one of those men, who, obscure and unknown in his own day, are likely to become the familiar personages of a subsequent generation.

Sadly no such clear image has emerged, and information about him must be gleaned from diverse sources. Necessarily it is fragmentary, deriving as it does almost exclusively from other people's histories, in which he played but a supporting role.⁴

Charles described Erasmus as having "extensive and diversified tastes and knowledge in literature, art, and even in science." Erasmus's scientific interests, at least in his youth, were stronger than this implies. From childhood days, when he and Charles had converted a garden shed into a makeshift laboratory, Erasmus developed considerable knowledge and application. At Cambridge in 1822 he attended Professor Henslow's lectures, recommending them to Charles as "very entertaining", and also developed an interest in geology under the guidance of Professor Sedgwick. In the spring of 1831 he went on a botanising trip to The Isle of Wight with his cousin Hensleigh Wedgwood; in 1832 he wrote to Charles that he had "established a very comfortable little lab in my lodgings, which has long been my great desideratum in my London life, and that and smoking fills up my day

delightfully." When he set up home in Great Marlborough Street in January 1836 his sister Susan reported to Charles that among his luggage were "13 Cab loads of Glass bottles etc from his Lab."³

Although a planned visit to the third meeting of the BAAS in Cambridge in June 1833 was not realized, Erasmus returned to Cambridge with Fanny and Hensleigh in the autumn of 1834. Most of their five day stay was passed in the company of Sedgwick and Whewell, as Susan reported:

Eras says Whewell took the lead in conversation which was of a religious turn: and Eras says he "is in despair he cannot write down his words for they were really *super human*" And in another part of his letter he says "the brilliancy and rapidity of Whewell's conversation with Fanny was such as I could have formed no conception of - The two professors harmonising beautifully: Sedgwick's simplicity and good faith in all he says and his picturesque manner of conversation shewed off Whewell's, which is all speculative and generalizing always brilliant and so perfectly elegant I believe it would be impossible to change a single word" This extract from his letter is sufficient to shew you how delightful his visit at Cambridge must have been."

Darwin wrote his Autobiography at a time when he and his colleagues were proselytising an idea of science as the monopoly of professional practitioners, so it is not perhaps surprising that he made so little of his brother's scientific activities. No such divisive philosophy existed in the 1830's to prevent Erasmus being warmly received by the philosophers of science.⁴

In addition to his scientific interests, Erasmus was

well read in philosophy and literature. For a brief time in 1823 he was a member of the Apostles Club, and although his membership predated that of F. D. Maurice, who conferred upon the club its mantle of high intellectualism, it has been suggested that the election of Erasmus itself represented a move in that direction. He was also widely travelled; from the summer of 1828 to the autumn of 1829 he spent most of his time in Europe visiting, among other places, Vienna, Milan and Rome. In the summer of 1831 he journeyed to France with Hensleigh, and subsequently visited Germany. He learnt to speak fluent German and became well versed in German literature. His taste for "literary leisure" ensured that, by the time that Charles arrived in London, Erasmus had gathered about himself a circle of friends comprising the Wedgwoods, the Carlyles, and Harriet Martineau, and to this circle Charles had immediate access.⁷

Erasmus's friendship with Hensleigh had developed out of the close relationship that existed between the Darwins and Wedgwoods during their childhood years. Erasmus was a year younger than Hensleigh and they were contemporaries at Christ's College, Cambridge; in 1831 they both lived in London and took breakfast together every Sunday. Erasmus would accompany Hensleigh on botanising walks in Battersea fields: "It is a great thing having so patient a friend as he is", Hensleigh wrote to his fiancée, Fanny Mackintosh, "there are very few men who would endure to walk with a friend who

was constantly stopping and running backwards and forwards." Erasmus, who, according to the accounts both of family and friends like Carlyle, combined kindness with a quick, sardonic sense of humour, provided an effective foil to the serious-minded Hensleigh.⁶

Their friendship was ironically reinforced by the intimacy which soon developed between Erasmus and Hensleigh's bride, Fanny. As early as October 1832, Catherine had written, "Erasmus and Mrs Hensleigh seem to be thicker than ever; she is quite as much married to him as to Hensleigh." In spring 1835, Charles quizzed Susan, "does Erasmus live with the Hensleigh's for the last year their names have never in any letter been separated"; that autumn, Catherine told Charles, "the Hensleighs have another boy; (they have 3 children now, one girl, and two boys) and as Erasmus entirely adopts the children, you ought to be properly interested in having *another nephew*." The relationship between them bordered on the scandalous: Emma, in December 1838, wrote to Charles that "I have saved F's credit in not mentioning to a soul her bit of folly in going into E's room that day and I hope you will do the same at Shrewsbury". But Hensleigh, increasingly involved with his etymological studies, was apparently not unhappy that in Erasmus Fanny had a surrogate husband: he was always first on the guest list at their parties, and when ill Fanny would move into his house to look after him; when apart they exchanged letters, building up

over the years a voluminous correspondence in which Fanny was referred to on occasion as "Dear Missis", and her daughters as "our daughters". Though loving and beloved by all his nephews and nieces, Fanny's children were to him the most precious of all.⁹

Fanny was not the only woman with whom Erasmus's name was linked. For a while there were rumours that he would marry Harriet Martineau. He had made her acquaintance in 1833 and their friendship survived her two year absence in America from 1834-1836. From the time of her return until she fell ill in 1839 they were often together, and even after her departure from London in the summer of that year, Erasmus made an effort to keep in touch by letters and visits, sending her books that he thought would interest her (including the Origin of Species when first published). Jane Carlyle was the third woman in Erasmus's life, and his friendship with her clearly facilitated the development of easy relations with her husband. Erasmus had introduced himself to Thomas Carlyle in May 1835. Although Thomas made little impression on him at this first meeting, he told Fanny Wedgwood that "Dear Mrs Thomas turned out a divine little woman". By the time Charles came to London, the Carlyle's were close friends and remained so despite increasing differences of opinion as Carlyle's attitudes hardened over the years.¹⁰

Erasmus forged a link between Harriet, Fanny and Jane. He was, in Jane's words, "a channel of communication" between them. What was it in Erasmus that made him so agreeable a companion? For one thing his life of leisure afforded him the time to be of practical service to his friends: he could substitute for Hensleigh when Hensleigh was too engrossed in his own pursuits to give the necessary time and attention to his wife; he could act as an escort for Harriet Martineau at a time when a single woman, however famous and independent, was an awkward phenomenon; he could assist Jane Carlyle by acting as her chauffeur and her adviser in all sorts of daily worries, and by being a shoulder to cry on in the loneliness and despondency that her life with Thomas sometimes gave rise to. His brother Charles too benefited from his brother's willingness to perform commissions on his behalf, particularly during the voyage of the Beagle. But Erasmus was more than merely useful: he provided entertaining and highly intelligent company. He offered encouragement and support to Hensleigh and to Carlyle during the writing of their books, and it was at his prompting, together with that of Lyell, that Charles eventually sat down to write the Origin. In one of the few favourable portraits drawn in his Reminiscences, Carlyle described Erasmus in this way:

He had something of original and sarcastically ingenious in him, one of the sincerest, naturally truest, and most modest of men; elder brother of Charles Darwin (the famed Darwin on Species of these days) to whom I rather prefer him for intellect....¹¹

2) Hensleigh and Fanny Wedgwood

Hensleigh Wedgwood, 1803-1891, was the fourth son of Josiah Wedgwood II and Bessie Allen. He was educated at Rugby and at Christs College, Cambridge. He was recognised as the intellectual of the family and fulfilled expectations by obtaining a first class degree in Maths, graduating in 1824. He became a Fellow of Christs College and took chambers at Grays Inn, being called to the Bar in 1826. Unlike his cousins, Erasmus and Charles, Hensleigh was not of independent means. With a family of eight children to support, Josiah II's sons had to earn their own living, despite the improvement in the Wedgwood company's fortunes during the 1820's. Hensleigh declined the invitation to join the family firm, where his brothers Frank and Joe were already employed, securing a post as police magistrate in Lambeth in 1832.¹²

Like his younger sister Emma, Hensleigh was deeply religious; although brought up within the Church of England, the Wedgwood children had learned at home the Unitarian doctrines of their forebears. Hensleigh leaned towards a simpler, purer religion than that of the Established Church. In 1830 he resigned his fellowship because of doubts concerning the Thirty Nine Articles. The particular focus of his opposition to the Established Church became the issue of oaths. Hensleigh's objections were two-fold: he believed that the swearing of oaths was forbidden by the Gospels, and that

the multiplicity of occasions which demanded oath-taking licensed hypocrisy. He became involved in a continuing campaign for reform: in 1833 he wrote to Professor Henslow, asking him to support the campaign in the university; in 1841, Darwin wrote to W. D. Fox urging him to seek the support of his MP and enclosing Hensleigh's "Pamphlet on Oaths"; in the 1850's Hensleigh joined with Erasmus Darwin, F. D. Maurice, Francis Newman and others in petitioning the House of Lords for the extension of relief from oath-taking to all those holding conscientious objections against it.¹³

In December 1837, meanwhile, Hensleigh had decided that he could no longer continue his job as police magistrate because of the conflict with his religious beliefs. He had wanted to resign four years earlier, but had been deterred by his father's request that he should reconsider. At the time Caroline Darwin had been staying at Maer and her letter to Charles highlights the different attitudes to religion of Hensleigh and his Darwin relatives:

he thought our Saviour's command "not to swear" was one which ought to be taken literally and that a judicial oath was consequently unlawful - I do not quite understand the reasons why he classed it among the commands to be taken literally and not with a latitude.

Four years on, Hensleigh could fight his conscience no longer and, notwithstanding the financial insecurity into which his family was plunged, he resigned his post. Charles reported the news to W. D. Fox, in terms that indicate the respect in which he held his cousin:

Hensleigh W. who married Fanny Mackintosh (and who is the pleasantest of the whole family) has long had great scruples about the profanation of taking oaths on *trifling occasions*. A week since it < > for him to swear 42 oaths! under the new reign to qualify as magistrate.-this he could not bring himself to do, and consequently resigned his place of 800£ per annum and is now utterly thrown out of all employment.- He has three children and may probably have many more, and has scarcely anything to live on.- It is a most distressing case: many thousand people might be searched and not so excellent, clever and admirable a pair could be found as H. and his wife....

Hensleigh moved his family from Clapham, back to Maer, where they stayed for six months while he considered his future. He thought of emigrating to America, and was asked by his father to join the pottery. But he and Fanny wished to live in London: he secured the post of Registrar of Cabs, which, though bringing in a salary only half that which he had enjoyed, was remunerative enough to allow this. In June 1838 the family settled in Notting Hill, moving thence to Great Marlborough Street and finally to Upper Gower Street, as neighbours of Charles and Emma Darwin in January 1840.¹⁴

Hensleigh's new post left him ample time to pursue his interest in etymology. This had been his hobby for several years, and in October 1833 he had published an article on the subject in the Quarterly Review; now he began work on the Dictionary of English Etymology, finally published in 1857 (a gestation period not unlike that of the Origin). It received considerable critical attention and provided an acknowledged

precedent for the Oxford English Dictionary. It was followed by On the Origin of Language in 1866, and Contested Etymologies in 1882, in addition to several articles. In 1842 he had been a founder member of the Philological Society: unlike Erasmus he was a respected participant in, rather than an interested observer of, London's intellectual life.¹⁵

Charles had long been used to think of Hensleigh as friend and adviser. He had consulted him on the question of the opportunity to travel with the Beagle, and Hensleigh wrote to Professor Henslow, in December 1833, that "I consider myself a sort of godfather to his voyage for he came over to Maer having given over all thought of it and I heartened him up and I believe it will answer very well to him." On his return from the voyage, Charles would not determine to publish his Journal of Researches until Hensleigh had advanced a favourable opinion; when illness began to prevent Darwin from attending meetings of the Geological Society, it was Hensleigh who acted as his deputy; his confidence in Hensleigh's ability and good judgement was demonstrated in his instructions regarding publication of the Essay outlining the theory of natural selection. On July 5th, 1844, in a letter to be opened in the event of his death, he wrote that it was his "most solemn and last request" that Emma devote £400 to its publication and "will yourself, or through Hensleigh, take trouble in promoting it."¹⁶

Hensleigh was useful to Charles, too, as a worker in a related field. The analogy between the development of language and that of natural history was one that had already been drawn by Charles Lyell. For Lyell, both geology and linguistics revealed a continually changing system; as in the organic world, so in the world of language, obsolete forms die and new ones are introduced. Darwin's quest for a theory of transmutation that would be all-encompassing, capable of subsuming morals, language, religion under one single law of evolution, gave especial relevance to this analogy. Thus, although his views did not coincide with Hensleigh's, the latter's specialist knowledge was valued, in the same way as that of experts in other fields, for its ability to provide basic data. Recorded in the metaphysical notebooks were Hensleigh's views on the use of language in poetry, and on the nature of instinct. Charles did not credit Hensleigh either in the Autobiography or in the Origin, and there is but one reference to his On the Origin of Language in the Descent of Man. By the 1860s the associated developments of specialisation, professionalisation and scientism had impressed the need for scientific theories to have scientific origins: Hensleigh's mind-body dualism and his interest in spiritualism diminished his scientific respectability. Darwin, never zealous about crediting other's work, could not enhance his own by reference to his cousin's.¹⁷

A more immediately practical use of his friendship with Hensleigh was the opportunity it gave Darwin to pursue his study of infant behaviour, important to him in relation to his search for proof of continuity between man and brute. Observation of Hensleigh's children, Julia ("Snow"), James ("Bro"), and Ernest provided much of the material for The Expression of the Emotions in Man and Animals (1872). These were the older children of Hensleigh's marriage, in 1832, to his cousin Fanny Mackintosh, (1800-89), daughter of Sir James Mackintosh and Kitty Allen. Fanny was beautiful, cultured and well-educated; like her widowed half-sister, Mary Rich, she was deeply religious, and became involved in the 1820's with the Clapham Sect, being a close friend of Marianne Thornton. Returning to Clapham after the death of Sir James Mackintosh in 1832 she and Hensleigh were introduced to the Rev. A. J. Scott, preacher in the Holy Catholic Apostolic Church, founded by Edward Irving, Carlyle's close friend. Mary Rich became a follower of Scott, and Fanny his devoted admirer. Charles Darwin was one of those persuaded in 1842 to attend one of Scott's lectures on the connection between science and religion, "but he got so bodily tired before it was over that it had not a fair chance..." Both he and Emma were disenchanted when Scott subsequently involved himself in homeopathy, a therapy condemned by Darwin.¹⁸

Fanny and Hensleigh's attachment dated from childhood days when the Mackintosh's stayed at Maer. (Charles met Sir

James there, remembering him as "the best converser I ever listened to.") Their marriage was delayed until Sir James's opposition was overcome by a promise to make their home with him, and until Hensleigh had secured the job that made the marriage financially acceptable. Emma Wedgwood had been a regular correspondent of Fanny's since 1828 and often stayed with her brother's family in Clapham; after Emma's marriage to Charles the two households met regularly, particularly after the Wedgwoods' move to Upper Gower Street in January 1840. In times of trouble they provided mutual support: in 1842 following a serious bronchial illness of Hensleigh's and a confinement of Fanny's, Emma had the older Wedgwood children to stay at Down for two months, after which they were joined by Fanny and Hensleigh, the new baby and Erasmus for a general convalescence. In 1851 Fanny reciprocated by travelling to Malvern to assist Charles in the nursing of his daughter Annie through her terminal illness, Emma being prevented from attending by the birth of her latest child. The habit of easy intercourse between the two households reinforced the development of a social group as Erasmus and the Wedgwoods became friendly, first with Harriet Martineau and subsequently and independently with Thomas Carlyle.¹⁷

3) Harriet Martineau (1802-1876)

Harriet Martineau was the daughter of a cloth manufacturer in Norwich. Her family was Unitarian and her youth was marked by an almost obsessional religious devotion.

She was a lonely child whose deafness, which afflicted her when she was twelve, and remained with her for life, reinforced her isolation. Intellectual pursuits were her chief solace: Joseph Priestley, "the great apostle of Unitarianism", became her guide and mentor in matters philosophical and spiritual. First introduced to his works as a teenager, she remained a devoted disciple, even making a pilgrimage to his grave during her travels in America. Under Priestley's guidance she was directed to Hartleyan associationism; she read Dugald Stewart with immense pleasure though her prior adoption of associationism inured her to his persuasion. The great question of her teenage years, the reconciliation of foreknowledge and freewill, was solved for her by Priestley's Doctrine of Necessity.²⁰

Shortly after her conversion to necessitarianism, at the age of twenty, she began to compose articles for the Unitarian periodical, Monthly Repository, under the editorship of William Fox. The death of her father, and the decline and ultimate collapse of his business following the economic depression of 1825-6, liberated Harriet from the customary restraints on a young woman of her social background and enabled her to take up writing as a career. In 1829 she spent a few months in London, but found few outlets for her work. Recalled to Norwich by her mother, she wrote and submitted three essays to the Central Unitarian Association. These were polemical tracts, designed to convert

Catholics, Mohammedans, and Jews to Unitarianism. Each of Harriet's essays was awarded a prize and her literary self-confidence grew.

She devised a project of writing a monthly series of stories which would, in simple language, make clear the precepts of political economy to ordinary people. Her economic theory was drawn from James Mill's Elements of Political Economy, her practical knowledge derived from observation of her father's manufacturing enterprise. Believing in a basic harmony of interests between the classes, she rejected socialistic schemes and opposed legislation to regulate industry. Thus the remedy for child labour was not statutory abolition, but a gradual rise in the standard of living which would permit people to keep their children at home. Free trade, through its promotion of manufacturing industry, would guarantee that rise. The main purpose of her Illustrations of Political Economy was to explain the fundamental economic laws, and to reconcile people to their operation. For in submission to them, rather than in futile resistance, lay the best hope of an improved quality of life. The tracts were unashamedly didactic, and hugely popular, reaching sales of 10,000 per month by 1834: it was early intimations of this success that caused Harriet to move to London in November 1832, bringing her mother and aunt as companions.²¹

For the next two years, Harriet Martineau lived a frantically busy life. In addition to the commitment to produce one story a month for two years, she maintained a large correspondence with her readers, and, at the instigation of Lord Brougham, then Lord Chancellor, prepared four tales for distribution by the Society for the Diffusion of Useful Knowledge, designed to educate the public into an appreciation of the need for Poor Law reform. Besides this heavy workload, there were the demands of hospitality: despite her criticism of "literary lionism" (the feting of literary celebrities at prestigious social functions), social success was not unwelcome to the provincial newcomer. Harriet Martineau was soon known to the leading figures of London society, and happily took her place among them.²²²

By August 1834, the series of Illustrations was finished and Harriet was in need of a complete break: she travelled to America where she already had an established reputation resulting from her Unitarian writings. She returned to London in August 1836, and wrote two books based on her experiences: the rather turgid Society in America and the more popular Retrospect of Western Travel. In these she declared her commitment to the abolition of slavery, gave qualified praise to the American political system as a model of democracy, and demanded on behalf of married English women the same property rights as those enjoyed by their American counterparts. Much of her exaggerated reputation for radicalism derives from

these books: in her Autobiography she tried to explain that she had intended to judge America by its own standards, rather than by comparison with England. As a relativist she did not necessarily consider the same arrangements appropriate for England. In the same period Harriet wrote several articles, mainly for the Westminster Review, a novel, Deerbrook, and How to Observe: Morals and Manners, the short book that was to make a strong impression on that other transient Londoner, Charles Darwin.²³

In the spring of 1839, she left with friends for a Continental holiday: her health deteriorated to such an extent by the time they reached Venice that it was decided she should return to England. Escorted back by her brother James, she moved into lodgings in Tynemouth, where she lay for five years on a sick bed. In 1844 she was cured, as she believed, by mesmerism, and resumed an active life, settling in Ambleside in the Lake District. Whilst ill, she had continued to write, though at a reduced rate: once recovered she resumed a more prolific output, publishing a travelogue, Eastern Life, in 1847, the History of England during the Thirty Years Peace in 1849, and, most notoriously, her confession of atheism, Letters on Man's Nature and Development, written with H. G. Atkinson, in 1851. Her last major work was her digest of Comte, Positive Philosophy, but she survived another supposedly terminal illness in 1855, which prompted her to write her Autobiography. She lived a

further twenty years, continuing to work in journalism and for particular causes, and maintaining a strong popular following. Harriet Martineau had spent only five years in London, but during that time she built a reputation which ensured interest in her and her work for the rest of her life.

Harriet's personal friendships also survived her departure from London. She had met the Wedgwoods in 1833, and became a close friend of Fanny, maintaining a huge correspondence over a long period. These letters reveal a shared interest in abolitionism, in education and in literature. At much the same time Harriet became friendly with Erasmus, as Caroline informed Charles when sending him some of the Illustrations of Political Economy in 1833:

I have sent you a few little books which are talked about by everybody at present - written by Miss Martineau who I think had been hardly heard of before you left England. She is now a great Lion in London, much patronised by Ld Brougham who has set her to write stories on the poor laws - Erasmus knows her and is a very great admirer and everybody reads her little books and if you have a dull hour you can, and then throw them overboard, that they may not take up your precious room.

The books reached Charles in July 1834 at Valparaiso; they were, he reported, "very popular on board", but "I have not had time yet to read any of them". By the time of Charles' arrival in London, the relationship between Harriet and Erasmus was close and Charles wrote to Caroline that

Our only protection from so admirable a sister-in-law is in her working him too hard. He begins to perceive, (to use his own expression) he shall be not much better than her "nigger".- Imagine poor Erasmus a nigger to so

philosophical and energetic a lady.- How pale and woe begone he will look.- She already takes him to task about his idleness - she is going some day to explain to him her notions about marriage - Perfect equality of rights is part of her doctrine. I much doubt whether it will be equality in practice. We must pray for our poor "nigger."²⁴

In the spring of 1837, speculation was still rife. Emma wondered how the Darwin girls would take to their new sister-in-law, while Fanny, perhaps jealous of the attention Erasmus bestowed on Harriet wrote that "it is amusing to me to see how entirely married they seem and he minds it as little as she does." A year later Charles informed his sister Susan:

Erasmus has been with her noon, morning, and night:- if her character was not as secure, as a mountain in the polar regions she certainly would loose it.- Lyell called there the other day and there was a beautiful rose on the table, and she coolly showed it to him and said "Erasmus Darwin" gave me that.²⁵

The closeness of this relationship has been obscured by the fact that Erasmus is not mentioned in Harriet Martineau's Autobiography. His niece, Julia Wedgwood, who had already had cause to complain of Carlyle's treatment of her favourite uncle in his Reminiscences, commented on this:

[Erasmus] was intimate also with a person whose friends, like those of Mr Carlyle, have not always had cause to congratulate themselves on their place in her gallery - Harriet Martineau. I have heard him more than once call her a faithful friend, and it always seemed to me a curious tribute to something in the friendship that he alone supplied; but if she had written of him at all, I believe the mention in its heartiness of appreciation, would have afforded a rare and curious meeting-point with the other "Reminiscences", so like and yet so unlike.

Harriet's autobiography understates too the depth of her

friendship with Julia's parents, Fanny and Hensleigh Wedgwood. It says only that their establishment was a "home house" to her, and a "refuge from the wear and tear of my busy life". Harriet's explanation, that she "particularised only well-known persons" who were not "intimate friends", is confounded by the lengthy characterisation of the Carlyles: it seems more probable that lack of renown determined the absence from her account of Erasmus and the Wedgwoods. Since her biographers have relied so extensively on her autobiography, this omission has not been rectified. But diary references to "dear Erasmus" and to visits from Fanny, and the 120 and more letters that she addressed to Fanny and her family, as well as the correspondence between Fanny and Erasmus, all testify to the close relations existing between them both during and after Harriet's residence in London.²⁴

Charles Darwin was introduced to Harriet on a visit to London in December 1836, and his immediate impression was none too favourable:

She was very agreeable and managed to talk on a most wonderful number of subjects, considering the limited time. I was astonished to find how little ugly she is, but as it appears to me, she is overwhelmed with her own projects, her own thoughts and own abilities. Erasmus palliated all this, by mentioning one ought not to look at her as a woman.

Once resident in London he had many opportunities for meeting her, and always referred to her with amused affection. He was interested to compare notes with a fellow author about methods of working:

I had a very interesting conversation with Miss Martineau,- most perfectly authorial,- comparing our methods of writing.- it seems wonderful the rapidity with which she writes correctly.- I felt, however, no small gratification, to find, that she is not a complete Amazonian, and knows the feeling of exhaustion from thinking too much.

Harriet for her part was fond of Charles and felt herself to be on close terms with him and Emma. She had first met Emma at the Wedgwoods house in Clapham in 1833: on her engagement to Charles, Harriet sent her some books she had written, which Emma considered would be "very useful" to her.

Harriet's opposition to slavery was an obvious point of contact between them, and Emma read her Westminster Review article on the subject in December 1838 "with great pleasure", finding some of it "very eloquent". Harriet characterised Charles in her autobiography (written four years *before* publication of the Origin), as the "simple, childlike, painstaking, effective Charles Darwin, who established himself presently at the head of living naturalists." Of the Origin she wrote to Erasmus:

I believed, and have often described, the quality and conduct of your brother's mind but it is an unspeakable satisfaction to see here the full manifestation of its earnestness and simplicity, its sagacity, its industry and the patient power by which it has collected such a mass of facts, to transmute them by such sagacious treatment into such portentous knowledge.²⁷

Darwin similarly admired Harriet's work, and most of her books are mentioned in his Reading Notebooks, (How to Observe, Eastern Travels, and Letters on Man's Nature and Development were read within months of publication). In

addition, Harriet provided a valuable example of someone not afraid to challenge conventional opinion. She had been bitterly attacked over "Weal and Woe in Garveloch", her story about the evils of over-population:

A woman who thinks child-bearing a crime against society! An unmarried woman who declaims against marriage!! A young woman who deprecates charity and provision for the poor!!!

Such was the abuse hurled at her by Croker in the Quarterly Review. She was attacked again because in her American books she defended a married woman's right to own property. Later still her faith in mesmerism courted the scorn of many, the Athenaeum reviling her for, as she put it, "the offence of recovery from a hopeless illness by a new method." (The Darwin brothers and the Carlyles shared this scepticism). Finally, there was her decision to publish the Letters on Man's Nature and Development. This exposed her to considerable hostility, elicited a scathing public attack from her brother James, and inevitably gave offence to many of her friends, Fanny and Hensleigh Wedgwood included. But her unpopularity was transient and her career in journalism continued as busy as ever: before Darwin's arrival in London, during their contemporaneous residence there, and after they had both retired to the country, Harriet Martineau showed that it was possible to challenge conventional opinion and survive.²⁸

4) Thomas Carlyle (1795-1881)

That Harriet Martineau should have been a close friend of the Wedgwoods and Darwins is not surprising: they shared a common background in the culture of provincial dissent in which their families each belonged to the Unitarian elite. On social and political issues there was a broad identity of outlook between them: opposition to slavery, support for education, subscription to orthodox political economy, and a mild commitment to the notion of progress - in this generally optimistic view of life there was agreement. What is more difficult to explain is the mutual attraction between Thomas Carlyle and this group: there would seem to be few points of contact between the liberal optimists and the gloomy autocrat.

In the 1830s, however, the differences between them were not so great; the younger Carlyle was less pessimistic and more interested in a wide range of ideas than the Carlyle portrayed by his biographer, J. A. Froude. As well as an unrivalled mastery of German literature and philosophy, he was well versed in the Scottish school of philosophy, a keen admirer, like Harriet, of Dugald Stewart. Although he condemned the arrogance of geologists, for whom "the Creation of a World is little more mysterious than the cooking of a Dumpling", he was neither ignorant nor uninterested in science. (He deliberately fostered the contrary impression to reinforce his repudiation of materialism.) A friend of later

years, Profesor John Tyndall, claimed that he had caused Carlyle to discuss Darwin's theory of evolution "and at last elicited from him the admission that there was probably more to be said for it than he supposed." Unlike Harriet, the Wedgwoods and the Darwins, he did not support the 1832 Reform Act, but his opposition was rooted in its hypocrisy rather than in a principled rejection of the wider franchise. His concern about the plight of the labouring classes, subsequently expressed in the pamphlet Chartism, was genuine, even if it led him to endorse social policies opposed by the others. Furthermore, his very dogmatism was a part of that charm that made him such good company, and was forgiven for that reason. The affections born in the 1830s were strong enough to survive the increasingly wide ideological gulf that separated them, and ensured that Froude's Carlyle, the elderly, isolated man of letters, continued to be treated with sympathy and respect by his friends of earlier days.²⁷

Since Froude was Carlyle's official biographer, it is important to appreciate that his was not a disinterested work, and that he had reasons, both personal and literary, for omitting Carlyle's friendships with the Darwins and Wedgwoods from his account. Froude met Carlyle in 1849, became a regular visitor to his home in Cheyne Row, and, following his move to London in 1860, his close companion. Carlyle had scorned the idea of a biography. In 1848 he noted:

Darwin said to Jane the other day, in his quizzing serious manner, "Who will write Carlyle's life?" The word reported to me set me thinking how impossible it was, and would for ever remain, for any creature to write my "life".

But in 1871, still preoccupied with the death of Jane five years earlier, he asked Froude to edit her collected letters, and then, in 1873, he entrusted to him the task of writing an official biography. In so doing he chose a biographer who had never known him in his happier days and whose literary self-importance ensured that he would focus on the inner man and relentlessly expose his weaknesses, in full accord with Carlyle's own mood of self-mortification.³⁰

Froude's biography was highly selective: he wished to present a portrait of the flawed hero, the lonely thinker whose heroic qualities did not save him from being the architect of a loving wife's despair. It was essentially a tragedy and "normalising" influences were not wanted. Personal dislike of the Darwins and Wedgwoods compounded this editorial bias with the result that neither Erasmus nor Hensleigh is mentioned in the biography. Professor Fielding, whose work is responsible for restoring to Carlyle the youthful personality that Froude suppressed, concluded:

We can see that Froude did take his vengeance on the Wedgwoods and Darwin. When he disliked anyone, he just left them out of the record altogether. He did the same with Carlyle's niece, Miss Aitken, with whom Carlyle had lived for the last fifteen years...Carlyle as Froude describes him is merely Froude's Carlyle; and Froude was the author of an apparently "official" life sanctioned only by his own opinion and personal vendettas.³¹

Thomas Carlyle was born in Ecclefechan, Scotland in 1795, the son of a Calvinist stonemason. He was educated at Edinburgh University to prepare him for the ministry, a career which he renounced in 1817. For the next five years he stayed at Edinburgh, studying physics, astronomy, geology and mineralogy. But, unable to cope with the religious vacuum into which his rejection of Calvinism had placed him, he turned for enlightenment to German literature; its impact was immense, causing him to relinquish his scientific studies and devote his life to literary pursuits. By the time he moved to London in June 1834, he had already completed his translation of Wilhelm Meister, published his Life of Schiller, and seen the serialisation of Sartor Resartus in Fraser's Magazine. He was then working on the French Revolution, to be published, amid great acclaim, in 1837. Through the decade his reputation as an authority on German literature grew and 5, Great Cheyne Row became something of a place of pilgrimage. In the 1840s he was a leading figure in intellectual circles, and his comments on contemporary events were eagerly awaited (Chartism was published in 1839, Past and Present, his response to the riots of August 1842, in 1843).

It is significant that it was not until the end of the decade that Froude met him, for the year 1850 marked the final break with the earlier more broad-minded Carlyle. In the Latter-Day Pamphlets, published in that year, he launched an assault upon democracy itself. Central government should

be strong and powerful; the people should realize that their best interests lay in submission to the benevolent rule of those best endowed to govern. The publication hastened the decline in Carlyle's popularity; he became engrossed in his Life of Frederick the Great, the final volumes of which were not published until 1865. A year later Jane died, and Carlyle lived out a lonely old age until his death in 1881.

Erasmus Darwin first introduced himself to Carlyle in May 1835, having been recommended to seek him out whilst travelling in Germany, where Carlyle had acquired, through the efforts of Goethe, a reputation as the foremost exponent of German literature in England. Erasmus was immediately attracted to Jane but was unimpressed by Thomas: "it is absurd after going to see him, but I really don't think I should be able to recognise him in the street if he should not have his green hat on." Two circumstances combined to overcome this unpromising beginning: the developing friendship between the Wedgwoods and the Carlyles, and that between the Carlyles and Harriet.³²

Thomas first became acquainted with Fanny's half-sister, Mary Rich, through their mutual friend the Rev. A. J. Scott. Mary introduced the Wedgwoods, and an especially close relationship developed between Fanny and Jane Carlyle. They had a common interest in their support for Mazzini, but theirs was primarily an emotional attachment. When Fanny had

to leave London, because of Hensleigh's resignation, Jane wrote, "I feel as if I had a thousand things to say to you, but when I would shape them into words they all resolve themselves into this; I love you dearly..." Relations between Hensleigh and Thomas were more complicated: Carlyle respected Hensleigh's philological knowledge and approved of his ethics, but he was never a tactful man, and Hensleigh was acutely sensitive to any perceived attack upon his religious beliefs. On 22nd October 1842 Thomas was led to write: "I cannot now recollect what loose talk of mine it was that has thus grated on your religious feelings; which, I hope, no deliberate talk or thought of mine would at any time offend...." The record of the friendship between the Wedgwoods and the Carlyles is inevitably patchy, being dependent on letters which were only necessitated by the absence of one or other party. Nevertheless, "the friendship was vigorously alive, and the Wedgwoods had a secure place in the very small circle of friends with whom the Carlyles dined out."³³

Erasmus introduced Harriet Martineau to the Carlyles in November 1836, and "She pleased us far beyond expectation", Carlyle informed his mother. "She is very Intelligent-looking, really of pleasant countenance, was full of talk, though unhappily deaf almost as a post, so that you have to speak to her through an ear-trumpet." Harriet came prepared to like and admire: she had heard Carlyle warmly praised in

New England, where Sartor Resartus was highly esteemed. She was soon a regular visitor to Cheyne Row, and in June 1837 Carlyle wrote to his friend Emerson:

I admire this good lady's integrity, sincerity; her quick, sharp discernment to the depth it goes; her love also is great, nay, in fact it is too great, the host of illustrious, obscure mortals whom she produces on you of Preachers, Pamphleteers, Antislavers, able Editors and other Atlases bearing (unknown to us) the world on their shoulders, is absolutely more than enough.

Carlyle often wrote disparagingly of Harriet: he disliked Society in America and described Deerbrook as "very ligneous, very trivial-didactic, in fact very absurd for the most part". There was evidently some professional rivalry between them: Harriet wrote of Chartism that it

gave me more pleasure and less pain than I expected in the reading... the excessive conceit, connected with want of knowledge, will do him harm. I think it will do no other harm, and a great deal of good. Nobody will follow him where he is wrong; and tho' his truths have been said before, and in plainer English, they will, I think, strike and work upon many who have passed over other expositions and remonstrances.³⁴

Whatever the limitations on their friendship, Harriet was often in the company of the Carlyles, as were the Wedgwoods. It is not therefore surprising that Erasmus soon became the trusted friend of Thomas and Jane. Carlyle described him as "a tall, bashful, sensiblish most good-natured man ... who does nothing but read a little, be "the cousin of everybody" and drive a cab!" Professor Fielding, developing an earlier study by Grace J. Calder in 1959, has catalogued the history of the friendship between Erasmus and

Thomas in so detailed a manner as to make it undeniable that this was an important one, not only in the 1830s, but throughout their lives, although with a diminished intensity after the death of Jane, when the illness of the former and the isolation of the latter kept them apart. Fielding shows, by a study of the correspondence between Erasmus and Fanny, and in a subsequent study of the relationship between the Carlyles and the Wedgwoods, that this intimacy extended to the other members of the group. Visits between the Carlyles and the Wedgwoods were frequent and Jane's report to Fanny of one evening gathering in March 1838 is characteristic: "My husband is gone to dine with your husband, and "Erasmus" at Mr Erskine's. Thence they proceed together to a "flare up" at Miss Martineaus..."³⁵

Charles and Emma Darwin were also on friendly terms with the Carlyles. Emma met Thomas whilst staying with the Wedgwoods in the summer of 1838: "I did not hear much of what he said, but his look is quite remarkably pleasant, and he has the most straitforward manner in the world and talks the broadest Scotch..." Although she had given up an attempt to read Sartor Resartus in the spring of 1837 because it was "such very hard reading", and disliked Chartism, she retained her favourable personal opinion, writing in February 1840, "He is very pleasant to talk to anyhow, he is so very natural, and I don't think his writings at all so." There is a reference to one of Carlyle's observations in an entry in

Charles's species notebooks in January 1838 (B 255e), suggesting that he was acquainted with Carlyle by this time, but it was not until November 1838 that he made his first visit to Cheyne Row. "One must always like Thomas", he wrote to Emma, "and I felt particularly well towards him, as Erasmus had told me he had propounded that a certain lady was one of the nicest girls he had ever seen." He was less enthusiastic about Jane: he disliked her accent and felt that she was not "either quite natural or lady-like". Emma was more tolerant: "I don't fancy Jenny would ever suit you, but I think the way to enjoy her company would be to see her without Mr Carlyle as she must have her full swing in talking." Of a dinner party at Erasmus's in January 1839 Charles wrote: "Carlyle was in high force, and talked away most steadily; to my mind Carlyle is the best worth listening to of any man I know."³⁶

Darwin's reading lists confirm his interest in Carlyle. The French Revolution is entered in March 1839, Chartism in January 1840, and Sartor Resartus, with the comment "excellent", in February 1841. Whilst disagreeing with much of what Carlyle wrote, he was yet struck by the power of his writing, and the exposure to opinions different from his own was, in itself, intellectually stimulating. He wrote to Caroline in October 1839:

If you want a book I recommend Carlyle's Miscellaneous Works - the reviews are certainly well worth reading, or rather I would say taking a little like a dose of physic.- for one becomes, as I have become, quite

nauseated with his mysticism, his intentional obscurity and affectation.- nevertheless it is very curious to discover what different kinds of minds there are in the world, viz. T. Carlyle's and any common Englishman's at the opposite end of the scale.-37

There is no disputing Carlyle's public opposition to the Origin: "Wonderful to me, as indicating the capricious stupidity of mankind; never could read a page of it, or waste the least thought upon it." And yet when his name was linked to an attack on Darwin, Carlyle took great pains both publicly and privately to dissociate himself from it. In January 1877 The Times had printed an extract of a letter which appeared in a provincial newspaper, supposedly written by Carlyle, in which Darwin's theory was described as a "Gospel of dirt, teaching that men have descended from frogs through monkeys". Carlyle's refutation of this extract was printed in The Times on 20th January 1877 and, for good measure, in the virulently evangelical Record on 14th February. It was contained in a letter from his friend W. E. H. Lecky:

Allow me to say distinctly, on Mr Carlyle's own authority, that the letter is a forgery, and that Mr Carlyle has been greatly annoyed by the persistence with which it has been attributed to him. Mr Carlyle as is well known to all his friends, is not a believer in the theory of Mr Darwin, but that is no reason for attributing to him a letter which he never wrote, and expressions about an old friend which he never would have uttered.

A week later Carlyle called on Erasmus to express his regret over the affair: "He said the letter expressed just the reverse of his opinion that you were a noble generous good

man and your intellect of the highest scientific order...", Erasmus reported to Charles, adding, "Going downstairs he said give my compliments and say it was an infernal lie."³⁶

Amicable relations between Carlyle and the Darwins were restored. Meeting Charles's son William two years later, Carlyle chatted to him for a while about Goethe, and, "as we came away he asked after my father, and said with a grin, "but the origin of species is nothing to me." " Still, there was little incentive for Darwin to make much of the connection with Carlyle in his Autobiography. This was no disinterested life story: like all his post-Origin writing, it was coloured by the desire to defend his theory and, in particular, to represent that theory as the product of the individual application of scientific method. Darwin devoted his description of Carlyle to the undermining of the latter's credentials as a serious critic of scientific theory:

His mind seemed to me a very narrow one even if all branches of science, which he despised, are excluded. It is astonishing to me that Kingsley should have spoken of him, as a man well fitted to advance science. He laughed to scorn the idea that a mathematician, such as Whewell, could judge, as I maintained he could, of Goethe's views on light. He thought it a most ridiculous thing that anyone should care whether a glacier moved a little quicker or a little slower, or moved at all. As far as I could judge, I never met a man with a mind so ill adapted for scientific research."³⁷

Harriet Martineau's Autobiography was written two decades earlier, and her memories drew on the Carlyle of the 1830s: her characterisation was a good deal more

sympathetic. "No kind of evening", she wrote, "was more delightful to me than those which were spent with the Carlyles"; she took issue with the popular conception of a hard, embittered man:

His excess of sympathy has been, I believe, the master-pain of his life... the savageness which has come to be a main characteristic of this singular man is, in my opinion, a mere expression of his intolerable sympathy with the suffering... I have felt to the depths of my heart what his sympathy was in my days of success and prosperity and apparent happiness without drawback; and again in sickness, pain, and hopelessness of being ever at ease again: I have observed the same strength of feeling towards all manner of sufferers; and I am confident that Carlyle's affections are too much for him, and the real cause of the "ferocity" with which he charges himself and astonishes others.⁴⁰

While Carlyle's ideas contributed to the debates in which Darwin and his friends were engaged, there is little direct evidence, in the form of notebook citations, for example, of his contribution to Darwin's speculation. It is important however, not to underestimate Carlyle's power, over many of Darwin's generation, as a source of moral authority. His doctrine of work, and the inspiration to follow that doctrine imparted by the force of his personality, gave a sense of direction and a new confidence to those who sought truth and challenged orthodoxy in the process. T. H. Huxley was one who acknowledged such a debt to Carlyle:

Few men can have dissented more strongly from his way of looking at things than I; but I should not yield to the most devoted of his followers in gratitude for the bracing wholesome influence of his writings when, as a very young man, I was essaying without rudder or compass to strike out a course for myself.⁴¹

5) Darwin's Forgotten Friends

From these brief biographies, it can be seen that during the years when Darwin was searching for a theory to justify his belief in the evolutionary development of life on earth, he was involved with a group of intellectuals who were deeply interested in philosophy and religion, in politics and social philosophy. The continuity in this group was provided by the intimacy between Erasmus Darwin and the Wedgwoods. They had made the acquaintance of Harriet Martineau, as had Emma Wedgwood, in 1833, and this friendship was resumed on Harriet's return from America in August 1836. Meanwhile, in 1835, Erasmus had introduced himself to Carlyle because of a common interest in German literature, while the Wedgwoods had built their acquaintance on mutual religious friends. When Harriet returned Carlyle was in the final months of preparation of the French Revolution, but he met her, at Erasmus's instigation, in November 1836 and they met regularly thereafter. In 1837, when Charles came to live in London the group was complete, although Carlyle was out of London in the summer months, as he was in the succeeding two years. In 1838 the Wedgwoods were in exile at Maer until June, although Hensleigh made regular trips to London during this period. In June 1839, Harriet left London for good, Darwin following her example three years later.

It is apparent that the times when all were together were limited, but this does not diminish their significance

for Darwin. They never formed an exclusive group; their value for him rested in their integration in London intellectual society, which made it possible for their debates to reflect so broad a spread of contemporary opinion. The frequency of their meetings and the intimacy between them afforded cogency and continuity to their discussions; Darwin's participation in them gave him access to a range of advanced thinking at a time when the pressure of his work and his own disinclination for society might otherwise have isolated him. The different perspectives that each brought to bear contributed to Darwin's pluralistic and non-dogmatic outlook, and therefore to the plasticity of the theory he ultimately published. To recognise the polarities represented in this forum, from Carlyle's individualistic hero to Martineau's deterministic emphasis on immutable law, is to recognise again the polarities encompassed by and reconciled in Darwin's theory.

Since these friends did not see themselves as a group, and since it was in the interests of none of the main protagonists in later life to make much of their earlier intimacy, the record of their friendship has to be reassembled from the correspondence which kept absent members informed of the others' activities. Letters from Harriet, Jane and Erasmus to Fanny Wedgwood in Maer in the first part of 1838 are filled with news, and the correspondence between Fanny and Erasmus, maintained over the decades makes frequent reference to Harriet and the Carlyles. The letters that

passed between Jane and Thomas Carlyle are similarly revealing. Harriet's letters after her departure from London repeatedly requested information about Erasmus, the Carlyles, and, to a lesser extent, Charles and Emma; she eagerly looked forward to visits from Thomas and Erasmus, and met with Jane in Liverpool in 1846 and in London in 1849. Erasmus was, in Professor Fielding's opinion, "possibly the Carlyles greatest friend", while correspondence between the Wedgwoods and the Carlyles shows that this relationship was alive at least until the 1860's. During Charles's residence in London he was included in this circle of friends, both before and after his marriage. Once retired to Kent he used to stay with Erasmus on his regular visits to London, and attended dinner parties, in company with Carlyle, given by Fanny and Hensleigh, who were themselves, together with Erasmus, welcome visitors to Down.⁴²

The reciprocal nature of the relationships between these friends is demonstrated by their efforts to support each other in difficult times. Harriet was one of the first people to be consulted by Fanny when her husband's crisis of conscience threatened the family's livelihood: "All my feelings are on your side. There can be no doubt of your peace of mind under all that this change will bring upon you." Her distress at the consequences of Hensleigh's action was matched by her admiration for his disregard of those consequences. In 1837 she offended the Carlyles with a clumsy

offer of financial assistance, but made amends by her efforts to make Thomas's lecture series a success, and by her assistance in the work of organisation for the second series the following year. On each occasion the friends rallied round to ensure good attendance, itself no small service, since the 1837 series on German literature was, in Fanny's opinion, "not very stimulating" and "certainly much inferior to his conversation".⁴³

When it was Harriet's turn to face financial hardship, following the onset of her illness, the friends again rallied round. She had twice refused a government pension (as had Carlyle) on the grounds that to accept would impair her independence as a writer and critic of social policy. Now, with a reduced ability to work, she found herself in straitened circumstances. Erasmus first offered to bear the cost of adding an extra room to her accommodation in Tynemouth and then organised a Testimonial Fund for her in 1843. The Fund raised the very considerable sum of £1300, and writing to Fanny the following year, Harriet avowed that it was the peace of mind given her by this that had enabled her to write her very popular Life in a Sick Room. Her decision to spend part of the proceeds on commemorative silver plate infuriated Jane and even Erasmus, but affection for Harriet survived this, as it did her mesmerism and the fuss over her demand in 1843 that her letters be destroyed (in protest against the current vogue of posthumous publication of the

correspondence of illustrious persons).⁴⁴

Erasmus meanwhile was a source of comfort to Carlyle in the depressions that were so often attendant on him while writing. "I see Carlyle almost daily as Madame is at Liverpool," he wrote in 1846, "and he has nothing to do and he bestows a good deal of his ennui upon me." Following Jane's death in April 1866, Carlyle became more and more a recluse. Fanny tried to call on him, but he did not see her and refused her invitation to visit him. But the letter he wrote was affectionate and asked Fanny to "Tell Darwin how faithfully I always remember him and his unwearied goodness to me, among many sufferings of his own."⁴⁵

To mention every instance of friendship, every record of meetings, every letter that passed between them would fill volumes and make monotonous reading. The evidence exists in the letters of Jane Carlyle, in the correspondence between Fanny and Erasmus and Fanny and Harriet, and in scattered references in other sources. If it had not been for the distortions arising from the scientific bias of Darwin and his editors, the personal prejudice of Froude and the exaggerated concern of Harriet Martineau with the famous, the existence of this circle of friends would not have gone unrecognised. Darwin's ready acceptance within this circle, and his enjoyment of that acceptance, is important not only for the consideration of the influences upon him during the

most creative phase of his speculative activity; it is important, too, in reemphasising the inadequacies of the scientific characterisation of Darwin as a man of science, and in restoring to him a more integrated personality.

NOTES TO CHAPTER 3

- 1 Darwin to Emma Wedgwood, 2 January 1839, Correspondence, 2, 155.
- 2 Erasmus Darwin to Darwin, 18 August 1832, Correspondence, 1, 259; Darwin to Caroline Darwin, 18 July 1836, Correspondence, 1, 502.
- 3 Caroline Darwin informed Darwin of the gift of the horse in her letter of 30 December 1833, Correspondence, 1, 359; Susan Darwin to Darwin, 22 November 1835, Emma Wedgwood to Jessie Sismondi, 29 November 1835, Correspondence, 1, 469, 470 n.2; Caroline reported Erasmus's preference for leisure in her letter to Darwin, 29 December 1835, Correspondence, 1, 474; Darwin to W. D. Fox, 12 March 1837, Correspondence, 2, 11.
- 4 Autobiography, p. 22; Emma Darwin, II, 147; Barlow, 1946, p. 12; before mid-century the only use of a similar epithet is in Darwin to Caroline Darwin, 19 July -12 August 1835, Correspondence, 1, 458, in response to news of a serious illness suffered by Erasmus. Spencer, 1904, II, 91; The Times, August 1881.
- 5 Autobiography, pp. 22,24; Erasmus Darwin to Darwin, 5 March 1823, Correspondence, 1, 7; Erasmus Darwin to Darwin, 18 August 1832, Correspondence, 1, 259; Susan Darwin to Darwin, 12 February 1836, Correspondence, 1, 489. The enthusiasm for chemistry was maintained over three generations, Dr Robert Darwin having earned his

- FRS in 1788 with a paper on experiments with light.
- 6 Susan Darwin to Darwin, 24 November 1834,
Correspondence, 1, 420. Erasmus, like Hensleigh,
sometimes attended Geological Society meetings, as
reported to Darwin by his sister Caroline, 21 February
1837, Correspondence, 2, 7.
- 7 Levy, 1979, p. 68, Allen, 1978 p. 27.
- 8 Hensleigh Wedgwood to Fanny Mackintosh, 6 May 1831,
Keele, W/M 194.
- 9 Catherine Darwin to Darwin, 14 October 1832, Darwin to
Susan Darwin, 23 April 1835, Catherine Darwin to Darwin,
30 October 1835, Correspondence, 1, 274, 448, 467. Emma
Wedgwood to Darwin, 26 December 1838, Correspondence, 2,
146: this letter was written following Emma's return to
Maer after a brief stay with the Hensleigh's to assist
Darwin in househunting. In Emma Darwin, II, 148,
Henrietta Litchfield claimed that Hensleigh's children
were Erasmus's "dearest of all". Some of the
correspondence between Fanny and Erasmus was
subsequently destroyed by Julia, perhaps because Julia
found them excessively indiscreet.
- 10 Erasmus Darwin to Fanny Wedgwood, Calder, 1959, p. 39,
dated May 1835 by Fielding, 1978, p. 78.
- 11 Jane Carlyle to Fanny Wedgwood, c.1840, in Fielding,
1981, p. 305; the extract from Reminiscences was quoted
in The Times obituary of Erasmus, Keele, W/M 1252.
- 12 Since the death of Josiah I in 1795, the company had

- been managed *in absentia* and its fortunes had declined. In 1810 Josiah II resumed control and in the 1820s a marked recovery set in (Schofield, 1963, p. 428.)
- 13 Wedgwood, 1980, pp. 229-311; Hensleigh Wedgwood to Henslow, 10 December 1833, Keele, W/M; Darwin to W. D. Fox, 25 January 1841, Correspondence, 2, 280; House of Lords petition, Keele, W/M 1371.
 - 14 Josiah II to Hensleigh Wedgwood, 1833, Keele, W/M 27-19558; Caroline Darwin to Darwin, 30 December 1833, Correspondence, 1, 360; Darwin to W. D. Fox, 11 December 1837, Correspondence, 2, 64; Wedgwood, 1980, p. 231.
 - 15 "Grimm on the Indo-European Languages", Quarterly Review, 50, October 1833, pp. 169-89. The Dictionary of English Etymology was described in Hensleigh's Dictionary of National Biography entry as "a work far in advance of all its predecessors", though "marred by imperfect acquaintance with the discoveries of philological science." Other publications by Hensleigh included The Principles of Geometrical Demonstration, 1844, On the Development of Understanding, 1848, "Mill's Logic", New Englander, 1875, p. 488 and "Capstan: Etymology of the Word" Academy, 1888, p. 376.
 - 16 Hensleigh Wedgwood to Henslow, 10 December 1833, Keele, W/M. It was Hensleigh's father whom Darwin called his "First Lord of the Admiralty" in recognition of his role in persuading Dr Robert Darwin to consent to the voyage: Darwin to Josiah II, 5 October 1836, Correspondence, 1,

504. Charles's apparent willingness to fall in with his father's earlier refusal may have reflected his own ambivalent feelings about the voyage, rather than, as conventionally seen, a habit of submission to an overbearing father. Hensleigh to Darwin, 20 December 1836, Correspondence, 1, 530; Darwin mentions using Hensleigh as a deputy in his letter to William Lonsdale, 14 April 1841, Correspondence, 2, 289; Darwin to Emma Darwin, 5 July 1844, LLD, II, 16.
- 17 Rudwick, 1979, p. 73; on Hensleigh's spiritualism see Darwin to Romanes, 21 September 1878, in the American Philosophical Society, Philadelphia. Darwin was never punctilious about acknowledgements. FitzRoy complained about the absence of any expression of gratitude to the ship's company in the Journal of Researches: FitzRoy to Darwin, 16 November 1837, Correspondence, 2, 58.
- 18 Observations of the infant Wedgwoods were recorded in M 58, M 96 and N 37. James Mackintosh and his wife were not members of the Clapham Sect but were on friendly terms with its key members (see Arbuckle, ed., 1983, pp. xii-xv and Wedgwood, 1980, pp. 192-3, 221-2). Mary Rich went to live with the Scotts when the Wedgwoods returned to Maer in 1838. Elizabeth Wedgwood related Charles's attendance at Scott's lecture in her letter to Jessie Sisoni, 3 May 1842, Emma Darwin, 1904, II 36. Darwin to

- Emma Darwin, October 1843, Correspondence, 2, 399:
- Darwin's condemnation of homeopathy and of mesmerism is in curious contrast to his faith in hydropathy.
- 19 The Mackintosh's lived at Maer for six months in 1827 (Wedgwood, 1980, p. 200; Autobiography, p. 30; on Fanny and Hensleigh's courtship, see Keele, W/M 194, 206, 210 and Wedgwood, 1980, pp. 205-8, 211-2. The letters from Charles to Emma during Annie's illness contain frequent references to Fanny's help.
- 20 The main source of information about Harriet Martineau remains Harriet Martineau's Autobiography, written in 1855, when she believed herself to be dying. Wheatley (1957) and Webb (1960) add little to this account. Pichanick, 1980, presents a more sensitive study, but, being primarily interested in her literary work, she offers little discussion of Harriet's life in London from 1836-1839. On the importance of Priestley, see Martineau, 1983, I, 105-6, and Pichanick, 1980, p. 73.
- 21 See "A Manchester Strike" and "A Tale of the Tyne", in the series of Illustrations of Political Economy. Increasingly, Harriet came to accept that her faith in the harmony of interests might not be justified. She gave her support, for example to legislation to control female and child labour in mines in 1842 (Pichanick, 1980, pp. 159-62).
- 22 On "literary lionism" see Martineau, 1983, I, 271-295.
- 23 Martineau, 1983, II, 102-105.

- 24 A selection of the correspondence between Harriet and Fanny Wedgwood is to be found in Arbuckle, ed., 1983; many of the original letters are at Keele University. Caroline Darwin to Darwin, 28 October 1833, Darwin to Catherine Darwin, 20 July 1834, Darwin to Caroline Darwin, 9 November 1836, Correspondence, 1, 345, 392, 518-9.
- 25 Emma Wedgwood to Fanny Wedgwood, 23 May 1837, Emma Darwin, I, 277; Fanny Wedgwood to Elizabeth Wedgwood, 3 May 1837, Keele, W/M 167; Darwin to Susan Darwin, 1 April 1838, Correspondence, 2, 80.
- 26 LLD, I, 24; Martineau, 1983, I, 374-5. As a child Julia had been a favourite of Harriet as well as of Erasmus. She became a celebrated and prolific author, writing for the Contemporary Review and the Westminster Review articles about Carlyle, George Eliot, Froude and others, as well as on the role of women in society. Her circle of friends merged with that of Martineau: a friend and admirer of Mrs Gaskell and Florence Nightingale, in love with Robert Browning, she had stayed with Harriet at her home in Ambleside and corresponded with her: Wedgwood, 1980, pp. 253-61, 275-85; Arbuckle, ed., 1983.
- 27 Darwin to Caroline Darwin, 7 December 1836, Correspondence, 1, 524; Darwin to Susan Darwin, 15 May 1838, Correspondence II 86. Emma reported her first meeting with Harriet to Jessie Sismondi in a letter of 10 October 1833, Emma Darwin, I, 257. The books

mentioned were probably the first two of three books written by Harriet, commissioned by the Poor Law authorities, entitled The Guide to Service, for the purpose of training girls for domestic service (Pichanick, 1980, p. 112): for Emma's reaction to the gift see Emma Wedgwood to Darwin, 25 November 1838, and to the article on slavery see Emma Wedgwood to Darwin, 29 December 1838, Correspondence, 2, 127, 148. For Harriet's opinion of Charles see Martineau, 1983, I, 355 and Harriet Martineau to Erasmus Darwin, 2 February 1860, Keele, W/M 32974-57.

- 28 Croker's review is quoted in Wheatley, 1957, p. 102; Harriet had also faced social ostracism in Boston because of her public endorsement of abolitionism - Pichanick, 1980, pp. 90, 101. Harriet reported the persecution she suffered in Martineau, 1983, II, 194, 345. The breach with James, whom she had adored as a child, had been widening for many years. From Tynemouth Erasmus Darwin wrote to Fanny Wedgwood in August 1842, "James M is as anxious to talk about time to H as H is to talk about space to him - I wish em joy" (Keele, W/M 227). In 1844 James attacked her for her belief in mesmerism and his subsequent savage review of the Letters on Man's Nature and Development (also known as the Atkinson Letters), entitled "Mesmeric Atheism",

- in the Prospective Review, May 1851, pp. 224-262, made reconciliation impossible. Typical of the public reaction was that of Darwin's aunt, Fanny Allen: "I cannot understand the motive that guided these two criminals in the publishing their miserable theory" - Fanny Allen to Elizabeth Wedgwood, 8 March 1851, Emma Darwin, II, 129.
- 29 Carlyle, Sartor Resartus, p. 1; Tyndall's comment was quoted in the obituary notice to Erasmus Darwin (Keele, W/M 1252); Turner, 1975, pp. 328-9.
- 30 Carlyle's Journal entry, 29 December 1848, Froude, 1902, I, 1.
- 31 Fielding, 1978, p. 97 and see Clubbe, ed., 1976, p. 353. For the unpopularity of Froude with Hensleigh and Erasmus, see Wedgwood, 1980, p. 317.
- 32 Ashton, 1980, p. 79; Erasmus Darwin to Fanny Wedgwood, May 1835, Calder, 1959, p. 39.
- 33 Jane Carlyle to Fanny Wedgwood, quoted in Fielding, 1981, p. 303; Carlyle to Hensleigh Wedgwood, 22 October 1842, *ibid.*, p. 307; *ibid.*, p. 309. Thomas Erskine, "Saint Thomas" as Jane Carlyle called him (Froude, 1902, I, p. 135), met Carlyle in 1837 and became a close friend. He had made public his own religious heterodoxy in 1831 when he supported a minister deposed by the Church of Scotland for preaching the doctrine of universal atonement. He provided another link between the Wedgwoods and the Carlyles, for Thomas Erskine was a

- distant connection by marriage of Mary Rich and much admired by her and the Wedgwoods. In 1851 she introduced her niece Julia Wedgwood, who became one of his most prominent disciples (Wedgwood, 1980, p. 254).
- 34 Carlyle to his mother, November 1836, Froude, 1902, I, 103; Carlyle to Emerson, 1 June 1837, Webb, 1960, p. 1; Carlyle to Dr John Carlyle, 16 April 1839, Arbuckle, ed., 1983, p. 18; Harriet Martineau to Fanny Wedgwood, 17 January 1840, *ibid.*, p. 25.
- 35 Carlyle to Dr John Carlyle, 17 February 1837, Fielding, 1978, pp. 78-9; see also Carlyle to Dr John Carlyle, February 1838, Arbuckle, ed., 1983, p. xix. Jane Carlyle to Fanny Wedgwood, 10 March 1838, *ibid.*, p. xxi; see also Jane Carlyle to Carlyle, 30 August 1838, Froude, 1883, I, 99. Calder, 1959, and Fielding, 1978 and 1981.
- 36 Emma Wedgwood to Jessie Sismondi, 21 July 1838, Emma Darwin, I, 287; Emma Wedgwood to Fanny Wedgwood, 23 May 1837, Emma Darwin, I, 276; Emma Wedgwood to Jessie Sismondi, 7 February 1840, Emma Darwin, II, 52; Darwin to Emma Wedgwood, 27 November 1838, Emma to Darwin, 7 January 1839, and Darwin to Emma, 2 January 1839, Correspondence, 2, 128, 160, 155.
- 37 Vorzimmer, 1977. Darwin to Caroline Wedgwood, 27 October 1839, Correspondence, 2, 236 - the acerbic tone of this comment possibly had more to do with the recent bout of ill-health than with Carlyle: the whole of the letter is written in similar vein.
- 38 Erasmus Darwin's obituary notice, Keele, W/M 1252;

- Fielding, 1978, p. 93; the Record, 14 February 1877, DAR 132(3); Erasmus Darwin to Darwin, 27 January 1877, Fielding, 1978, p. 94.
- 39 Emma Darwin, II, 236-7; Autobiography p. 67.
- 40 Martineau, 1983, I, 377, 381-2.
- 41 T. H. Huxley to Lord Stanley, 9 March 1881, Huxley, ed., 1900, II, 34. J. S. Mill similarly found the significance of Carlyle in the power rather than the substance of his writing (Mill, 1971, p. 105), and Julia Wedgwood ascribed to Carlyle the fact that "it has become the social creed of the upper classes that they must in some way justify their position" (Julia Wedgwood, 1881, p. 595).
- 42 Fielding, 1981, p. 302. An example of Charles's and Emma's inclusion in invitations to the Wedgwoods from the Carlyles, may be seen in Jane's letter to Fanny in 1840 quoted in Fielding, 1981, p. 306: it seems safe to assume that the extra guests expected were the Darwins and the Sismondis, who were staying with them.
- 43 Harriet Martineau to Fanny Wedgwood, 19 December 1837, Keele, W/M 547-32902; Arbuckle suggests that Harriet "may well have taken Hensleigh as an example for her own future acts of conscience" - Arbuckle, ed., 1983, xvii. Fielding, 1978, p. 81: Fanny Wedgwood to Elizabeth Wedgwood, 26 May 1837, Fielding, 1981, p. 303. Harriet had also been instrumental in organising the publication

of Sartor Resartus in book form (Pichanick, 1982, p. 108).

- 44 Arbuckle, ed., p. xviii; Harriet to Fanny Wedgwood, 11 January 1844, *ibid.*, p. 70. Although Jane frequently ridiculed Harriet (see for example her comments on Harriet's wish for her letters to be burnt: Jane Carlyle to Jeannie Welsh, 26 January 1843, Huxley, ed., 1924, p. 86) she went to considerable trouble to maintain the acquaintance at least until the end of the 1840's.
- 45 Erasmus Darwin to Fanny Wedgwood, July 1846, in Calder, 1959, p. 43; Carlyle to Fanny Wedgwood, 22 October 1866, in Fielding, 1981, p. 313.

THE WIDER CULTURE

The neglect by historians of Darwin's cultural environment is largely to be explained as a historiographical curiosity. The cause of "scientism", of the freedom and autonomy of science, and therefore of the absolute hegemony of scientific "truth", was best served by depicting Darwin as a solitary genius, addressing himself to problems arising out of a misfit between data and theory, and proceeding to solve them within a strictly "scientific" framework. In a field that was for long dominated by professional scientists, imbued with positivist or scientistic assumptions, it is not surprising that this picture of Darwin became predominant. Since the 1960s the entry into the history of science of practitioners from other branches of history, and the demise of the positivist consensus within science, has brought about radical revisions in Darwin studies, particularly in relation to the setting of Darwin and his work in the context of his place and time.¹

Darwin was born into the provincial, professional, Dissenting middle class. Like others of a similar social background, his family observed the forms of the Established Church to avoid the Nonconformist disabilities, but retained a liberal belief in the individual's responsibility to judge

in matters of doctrine. To a greater degree than most of his contemporaries, he enjoyed a private income: the direction of his professional career was not constrained by financial considerations. He came to London, again like many contemporaries, in search of intellectual, social and scientific stimulation. Intellectual life in the early Victorian era was characterised by a unitary view of knowledge: a poet could pass judgement on science with impunity, as Tennyson did, and a scientist on society, as Darwin expected to do. The men of science addressed the same audience as the men of letters, and even Carlyle, with his widely advertised contempt for the arrogance of science, was not above using scientific analogies and metaphors in his writing. Darwin was well integrated in this environment; exposed to diverse influences and experiences, he was adept at translating them and putting them to use in his private speculations. His inner circle of special friends, themselves well-acquainted with London's most prominent intellectuals, was useful in providing a medium for the transmission of those influences, and in presenting a forum for discussion and so promoting their evaluation. Contemporary opinion legitimised the translation of socio-economic concepts for the use of natural history and vice versa, ensuring a high degree of cultural determination in Darwin's ideas, and interdisciplinarity in the structure of his argument.²

In The Young Darwin and his Cultural Circle, Edward

Manier demonstrated the scope and impact of Darwin's reading programme. Focussing attention on those authors whose works Darwin annotated, or to whom he referred in his transmutation and metaphysical notebooks, he found that, in the years 1837-9, Darwin was engaged in a philosophical debate, critically reviewing the ideas gained from his reading in the light of his own beliefs and in the light of his scientific theories. Manier traced the influence of Dugald Stewart in Darwin's historical analysis of the moral sense and religious instinct, and that of Comte's Law of Three Stages, as explained in Brewster's review of Comte, read by Darwin in August 1838. Questions about materialism figured prominently in Darwin's metaphysical notebooks and Manier notes the range of authors consulted by Darwin: William Abercrombie, Benjamin Smart and John Fleming among others. Manier sees Wordsworth as a vital influence on the young Darwin; whilst admitting that the evidence for such influence is largely circumstantial, (resting mainly on Darwin's autobiographical boast of having twice read the Excursion in the years 1837-9), Manier contends that Wordsworth's vision was important both in tempering the mechanistic analyses of Paley, Malthus and Whewell, and in proffering an idealistic notion of the role of science in society. "[Darwin's] early Notebooks and manuscripts were an illustration of the scientists' participation in some part of the poet's quest for the meaning of life."³

Manier's work is a landmark in the contextualisation of Darwin studies, highlighting the extraordinary range of influences to which Darwin was exposed. What his study could not do was to explain how these influences were filtered and sorted, and what was the relative importance of the different authors mentioned (beyond a crude quantitative assessment of the frequency of citation). An understanding of why Darwin consulted particular authors and how they came to influence his thinking is assisted by an appreciation of his cultural environment. His interest in Dugald Stewart, for example, is more understandable when it is remembered that both Harriet Martineau and Thomas Carlyle were learned admirers of Stewart's work. Similarly, Manier's belief in the importance of Wordsworth is supported by the knowledge that there were three different routes by which Darwin might have acquired an interest in Wordsworth: firstly, through the Wedgwood family connection, secondly, through certain of Darwin's Beagle experiences which complemented Wordsworth's vision, and thirdly, through the interest of Carlyle and Erasmus in Naturphilosophie.

A further difficulty with Manier's study is that, in attempting to fit aspects of Darwin's thought to a particular source, he underestimates the fluidity in his ideas, especially in those periods of his life when he was most closely involved in intellectual debate (as in his London years, and again in the decade following publication of the

Origin). This problem is demonstrated in Manier's attribution to Hume, Comte and Wordsworth of the beginning and end of Darwin's religious difficulties:

Apparently Hume and Comte made it impossible for him to articulate his views within the context of a consistent and explicit deism, but Wordsworth pointed the way to a natural resolution of the themes of chance, suffering, hope and love which was, at least, not atheistic....the young Darwin sought no theology beyond that of Wordsworth's poetic account of the excursive quest for the meaning of life within nature itself.

In fact, the sources of Darwin's religious doubts were very much more complex, nor did he ever arrive at any satisfactory or lasting solution to them.⁴

Gillian Beer has also drawn attention to Darwin's debt to Wordsworth. She quotes from the preface to Lyrical Ballads,

If the time should ever come when what is now called science, thus familiarised to men, shall be ready to put on, as it were, a form of flesh and blood, the Poet will lend his divine spirit to aid the transfiguration, and will welcome the Being thus produced, as a dear and genuine inmate of the household of men.

She then counterposes a quotation from the Origin: "Science, thus familiarised to men, shall be ready to put on, as it were, a form of flesh and blood." Like Manier, Beer is interested in the relationship between literary influences and the development of Darwin's thought, but overcomes the difficulties raised by his work by locating her study firmly in the context of early-Victorian culture. In Darwin's Plots: Evolutionary Narrative in Darwin, George Eliot and Nineteenth

Century Fiction she contends that mid-nineteenth century scientists shared a common language with the educated public and drew openly upon literary, historical and philosophical material. It is this common language that explains the anthropomorphism of Darwin's writing, which worried subsequent Darwinian disciples who saw it as at variance with their master's own clear repudiation of contemporary anthropocentricity in *Natural History*. But Darwin did not suffer any sense of paradox: anthropomorphism was philosophically legitimised by his very rejection of a qualitative difference between man and the lower forms of life.³

In addition to exposing the constraints placed upon the structure of Darwin's argument by the language in which he thought and wrote, Beer looked at specific influences upon Darwin. Of particular importance is her drawing attention to his debt to Milton. The Autobiography writes that, until his return to England, when Wordsworth and Coleridge usurped that position, "Milton's Paradise Lost had been my chief favourite, and in my excursions during the Voyage of the Beagle, when I could take only a single small volume, I always chose Milton." Beer regards Darwin's reading of Milton as crucial for investing Malthusian population theory with creative power. Whereas for Malthus superfecundity was a danger to be suppressed, under the mediating influence of Milton it became a liberating and creative principle.⁴

The difficulties of drawing a direct relationship between Darwin's reading and his population thinking are well evidenced in this reference to Milton. For Manier credited Wordsworth with a similar mediating influence, while a recognition of superabundance as a positive force may also be found in the poetry of Charles's grandfather, Dr Erasmus Darwin:

All these, increasing by successive birth,
Would each o'erpeople ocean, aire and earth...
The births and death contend with equal strife,
And every pore of Nature teems with Life.

Moreover, Darwin's circle of friends provided another means by which the negative results of Malthus's original theory could be transformed into a creative agency. But the fact that exclusive influence cannot be assigned to any one source does not imply that he arrived at his idea of the creative force of population pressure in isolation from others who attempted to understand the meaning of superfecundity: on the contrary, Darwin's exposure to similar ideas from disparate sources must surely have augmented their force.⁷

1) Darwin's heritage: family influences. Beagle experiences

An interest in questions of philosophy was part of Charles Darwin's birthright. The marriage between his parents, Robert Darwin and Susannah Wedgwood, cemented a long standing friendship between Dr Erasmus Darwin and Josiah Wedgwood I, two luminaries of the early years of the Industrial Revolution. Erasmus was a respected medical

practitioner, Josiah a largely self-educated pottery manufacturer. Erasmus was a founder of the Lunar Society of Birmingham, fellow members of which included Josiah I, Joseph Priestley, and Samuel Galton (grandfather of Charles's cousin Francis). Josiah was, like Priestley, a Unitarian; Erasmus was a sincere deist whose theory of organic volition, while foreshadowing Lamarck's "pouvoir de la vie", was closer to the spiritual materialism of Priestley than to the reductionist atheism subsequently associated with Lamarckism. Erasmus Darwin achieved national acclaim in the 1790s with the publication of The Botanic Garden (1789-91) and Zoonomia (1794). The former was a poem popularising the latest discoveries of scientific investigation, the latter a medical treatise postulating that all illnesses were variants of the physiological state of the nervous system. Dealing with organic origins in this context, it proposed the mutability of species and man's descent from lower forms.²³

At the time of publication these books were well received. But by the end of the 1790s, radical thought was under attack in the widespread fear generated by the French Revolution. Erasmus's work was condemned and ridiculed by government-inspired publications such as the Anti-Jacobin, although it prompted more thoughtful answers such as Paley's Natural Theology. His format, that of the didactic poem, also contributed to his rapid loss of popularity as Wordsworth and Coleridge ushered in a new style of poetry. Nevertheless new

editions of the Botanic Garden were published in 1809 and 1825 and in the 1840s Dr Darwin's name was resurrected in the discussions aroused by the publication of the Vestiges. Erasmus Darwin was for Charles no forgotten ancestor, but a continuing example of literary and scientific distinction.⁷

Charles's debt to his grandfather is commonly assessed on the basis of the degree of similarity or otherwise in their respective theories. Similarity is seen in Erasmus's image of the struggle for survival, "one great Slaughter-house the warring world", in the role of reproduction in transmitting improvements and in the inheritance of acquired characters. Against this is set Erasmus's belief in volition, decisively rejected by Charles, which was given expression in Zoonomia:

all warm-blooded animals have arised from one living filament, which THE FIRST GREAT CAUSE endued with animality, with the power of acquiring new parts, attended with new propensities, directed by irritations, sensations, volitions, and associations; and thus possessing the faculty of continuing to improve by its own inherent activity, and of delivering down those improvements by generation to its posterity, world without end!¹⁰

Darwin later denied that Zoonomia had been of any real value to him: once again he was intent on minimising his debt to one whose reputation could not enhance his own, in the eyes of a society converted to the values of scientism and specialisation. The Autobiography admitted however that he had been impressed with Zoonomia whilst at Edinburgh

University, and the transmutation notebooks reveal that he reread it in 1837. His personal respect for his grandfather led him to oversee the publication of Ernst Krause's Erasmus Darwin to which he contributed a long biographical introduction. In this he repudiated the charge of atheism laid against Erasmus, claiming that he had never relinquished his belief in God as Creator of the Universe and had indeed published an ode on the folly of atheism and the virtue of Christian precepts for upholding a moral code. Charles had planned to say more in praise of his grandfather: the draft copy commended his work in scientific agriculture and in medicine, as well as his philanthropy and opposition to slavery. These passages were edited out by his daughter Henrietta, as was the following condemnation of the repressive religious climate in England at the turn of the century:

he was unorthodox; and as soon as the grave closed over him he was grossly calumniated. Such was the state of Christian feeling in this country at the beginning of the present century; we may at least hope that nothing of the kind now prevails.

The assured reputation of the Origin meant that Darwin was free to declare his respect for his grandfather, as passages like these, excised by his family for different reasons, clearly show. Whatever the merits of Erasmus Darwin in terms of authorship of particular ideas, the example he provided of speculative thought made public, and of acclaim deriving therefrom, was of immense importance.¹¹

An interest in intellectual pursuits was a legacy too of the Wedgwood side of Charles's family. Erasmus's fellow "Lunatick", Josiah, found his main interests in the industrial application of the Society's researches in chemistry and in engineering. However, his two sons, Tom and Josiah II were enthusiastic devotees of philosophy and literature. Tom was a friend of Dugald Stewart (providing yet another link between him and Darwin), as well as of Wordsworth, Coleridge and Godwin. Godwin's sister-in-law, Everina Wollstonecraft, became governess to Jos's children. Tom and Jos granted an annuity to Coleridge (Tom's, by a bequest in his will, continued to be paid until Coleridge's death in 1834), and their sister Susannah, with her husband Robert Darwin, attended his first sermon in the Unitarian chapel in Shrewsbury in 1798. Wordsworth was also a recipient in 1799 of Wedgwood largesse. Tom was interested in Natural History and carried out important work in chemistry and photography, but his life was overshadowed by depression and psychosis, and he died in 1805. By this time he had brought James Mackintosh into the family circle; Mackintosh married Jos's sister-in-law, Kitty, while his friend, the political economist Sismondi, married another Allen sister, Jessie. Thus Tom introduced to the Wedgwoods two of the most eminent intellectuals of their generation.¹²²

Charles's interest in his Wedgwood grandfather was slight. Josiah I had died in 1795 and Susannah's early death

removed the most obvious source of knowledge about him. His inferior formal education and social status may also have influenced Charles. Towards his uncle Josiah II, however, Charles always showed real affection, augmented, after the return of the Beagle, by professional respect, arising from Jos's experiments in domestic breeding and in scientific agriculture. While his Darwin ancestry gave him a precedent of authorship, his Wedgwood relatives supplied links with the Romantics, acquaintance with philosophers and political economists, and experimental data. In addition, Maer, always a second home to Charles, provided an environment which encouraged learning and open discussion of radical ideas.¹³

From family background Darwin also inherited an interest in politics and social affairs. His grandparents were Whigs, Americanophiles, and antislavers. Josiah I had been responsible for the free distribution of a cameo engraved with the slave's question, "Am I not a man and a brother?" (a cameo parodied by Punch following publication of the Origin). In 1826 Josiah II organised a County petition against slavery, and two years later his daughter Sarah was distributing anti-slavery pamphlets while his wife Bessie involved herself with an anti-slavery Ladies Society in Newcastle-under-Lyme, remarking that "we don't meet with much success among the higher gentry. The set below them (en Rue Basse) is much more impressible." In 1832 Josiah became a Member in the newly reformed Parliament (having stood

unsuccessfully the year before). He was a conscientious member, who devoted much of his attention during his three year tenure to the slavery issue.¹⁴

During the voyage of the Beagle, Charles was kept informed of his uncle's parliamentary activities until he stood down in January 1835. Political gossip was a common feature of letters written to Darwin from family and friends, and from them he learned of the rise and fall of ministries, the rivalry between Whigs and Radicals, the progress of reform. The fact that FitzRoy was a Tory caused Henslow to fear that his protégé might defect, but, replied Charles "I would not be a Tory if it was merely on account of their cold hearts about that scandal to Christian Nations, Slavery." Political news was received by Darwin with interest, but English politics inevitably diminished in importance in the light of the contemporary scenes and societies that Darwin was himself witnessing; as early as June 1832 he confided to his diary, "The very interesting and important news of the minority of Earl Grey on the reform was brought late last night by the Packet. The latest information is 20th of May. The distance of time and space from the events takes from me the keen interest for Politicks and Newspapers." Erasmus echoed this sentiment in his letter to Charles in August of that year, commenting succinctly that "Politics wont travel."¹⁵

Of more interest to Darwin was the social and political condition of places he visited on his travels. His opposition to slavery was strengthened by his first-hand experience of it in Brazil in 1832: "every individual who has the glory of having exerted himself on the subject of Slavery, may rely on it his labours are exerted against miseries perhaps even greater than he imagines!" The institution of slavery was the occasion of one of Charles's bitterest arguments with FitzRoy. The following year Darwin witnessed the war of extermination being waged by General Rosas on the Indians. His reactions reflect the tension in him between the would-be objective observer of inevitable and "natural" processes and the passionate advocate of justice. The former could argue that "This war of extermination although carried on with the most shocking barbarity, will certainly produce great benefits"; the latter demanded "Who would believe in this age in a Christian civilised country that such atrocities were committed?" Five years later he resolved this tension by explaining all on the basis of a theory which laid the blame for such iniquities neither on God nor on man, but on Darwin's own version of the law of nature, an explanation that in the course of time effectively palliated his sensitivity even to the horrors of slavery.¹⁴

During the voyage Darwin's diary recorded his opinions on such matters as the seizure of the Falkland Islands by the British, the political organisation of Tierra del Fuego and

Monte Video, the economics of the estancia in Peru, the role of missionaries as a civilising and educational influence, and the convict system of New South Wales. In his London years he no doubt drew upon these experiences when he "went a little into society" and enjoyed the company of "eminent men". He also wrote them into his Journal of Researches, which, like Lyell's Travels in America (1845), bears testimony to the multidisciplinary of author and audience, combining, with no appearance of discontinuity, passages of geology with passages of social comment.¹⁷

2) Darwin and the Erasmus Circle

When Darwin returned from the Beagle voyage, he had a wealth of experiences to reinforce the liberal political outlook that was his heritage. His scientific interests had intensified to the point where he was satisfied that he must make his career in science, but neither in his writings nor in comments about him by others is there any indication that during these London years professional concerns eclipsed others, or distanced him from the influences to which family background and personal experience exposed him. The reading programme he embarked on testifies to his unabated interest in philosophical questions of all kinds. Nor are the lists contained in the Reading Notebooks exhaustive: they were not begun until February 1838, and do not include all that he read. Darwin's extensive library similarly understates the scope of his enquiries, as he was not a collector, and would

as happily borrow a book as own it.¹⁸

In his Autobiography, Darwin discounted the value of much of his reading during this time, but his elderly reflections are a poor guide to its contemporary significance. In old age he was consistently rude about Comte, writing to Spencer in 1875: "How curious and amusing it is to see to what an extent the Positivists hate all men of science; I fancy they are dimly conscious what laughable and gigantic blunders their prophet made in predicting the course of science." But when he had first read Brewster's review of Comte one evening at the Athenaeum he wrote enthusiastically to Lyell, "By the way have you read the article in the Edinburgh Review on M. Comte Cours de la Philosophie, (or some such title) - it is capital - there are some fine sentences, about the very essence of science being prediction, - which reminded me of "its law being progress". He referred to Comte several times in the metaphysical notebooks and retained an interest in him for many years. G. H. Lewes's edition of the Philosophie Positive was noted in the Reading Notebooks in 1854, and a letter to a correspondent confirmed that he had also read Harriet Martineau's digest of Comte.¹⁹

With Erasmus's friends in London Darwin could indulge his enthusiasm for new ideas. Their interests encompassed the whole range of political, social and religious philosophy,

but certain themes were of especial significance for Darwin. Among these may be singled out cultural relativism, the existence of universal laws of social and moral organisation that underpinned that relativism, German culture, and the Coleridgean concept of a cultural clerisy whose function it was to impart wisdom and so bring about the moral improvement of society.

An appreciation of cultural relativism was for Darwin a legacy of the Beagle voyage. He had witnessed the noble Indian (the barbarian) exterminated by the Spanish forces (the forces of civilisation) and he understood how the context determined the meaning of such terms. Harriet Martineau's How to Observe, a short book designed to help a traveller look at the world with unprejudiced eyes, therefore found in his experience an answering chord. He read the book when it was published in 1838, and summarised its themes in his first metaphysical notebook. In How to Observe, Harriet articulated her belief that different religious forms were suited to different societies and that each had an inner core of truth. She denied the existence of a universal moral sense and asserted that morality is always relative to local and temporal conditions: "every prevalent virtue or vice is the result of the particular circumstances amidst which the society exists." She argued however that there is one fundamental universal law of charity: "Whatever tends to make men happy, becomes a fulfillment of the will of God. Whatever

tends to make them miserable becomes opposition to his will." In his notebook, Darwin argued that the universal core admitted by Martineau "is natural consequence of man, like deer, etc., being social animal", and that the diverging development of this core, resulting from different spatial and temporal conditions was "No more wonderful than dogs should have different instincts". By this means he resolved the supposedly human attribute of charity into a variant of the social instinct common to all animals who live in groups: "Miss Martineau...says charity is found everywhere (is it not present with all associated animals?"²⁰

The relativism of Harriet Martineau was also to be found in Carlyle's work. His sense of historical perspective is well demonstrated by an extract from his review of Croker's edition of Boswell's Johnson: "What things have we to forget, what to fancy and remember, before we, from such distance, can put ourselves in Johnson's place; and so, in the full sense of the term, understand him, his sayings and his doings?" As with Harriet, Carlyle accepted certain universal laws, or eternal truths. One of these, which complemented both Darwin's personal experiences of racial subjugation and his reading of Malthus's accounts of the same phenomenon, was his belief in the concept of justification by appeal to superior force, the application of "might is right". It was in Chartism, a volume written in the autumn of 1839, that this concept was given its fullest expression:

Whose land was this of Britain? God's who made it, His and no other's it was and is. Who of God's creatures had right to live in it? The wolves and bisons? Yes they; till one with a better right showed himself. The Celt, "aboriginal savage of Europe," as a snarling antiquary names him, arrived, pretending to have a better right; and did accordingly, not without pain to the bisons, make good the same. He had a better right to that piece of God's land; namely a better might to turn it to use; - a might to settle himself there, at least, and try what use he could turn it to. The bisons disappeared; the Celts took possession, and tilled. Forever, was it to be? Alas, Forever is not a category that can establish itself in this world of Time. A world of Time, by the very definition of it, is a world of mortality and mutability, of Beginning and Ending. No property is eternal but God the Maker's: whom Heaven permits to take possession, his is the right; Heaven's sanction is such permission, - while it lasts: nothing more can be said. Why does that hyssop grow there, in the chink of the wall? Because the whole Universe, sufficiently occupied otherwise, could not hitherto prevent its growing! It has the might and the right.

Notwithstanding the reference to Heaven in this passage, Carlyle had, like Martineau, observed "natural" processes, and extrapolated, from those observations, "laws of nature" of universal application. Though they differed in the ways they sought to reconcile the operation of such laws with the ways of God or of Man, yet a firm belief in the guidance of the universe according to a fixed pattern of secondary law was a belief held in common by them and by Darwin. These universal laws were the fixed points of reference in a world rendered uncertain and insecure by Carlyle's historical relativism as much as by the moral relativism of Harriet Martineau. The consilience of their thinking with that of Darwin, whose theory demanded a world of constant change for the operation of his universal law, is readily apparent.²¹

Ultimately the result of Darwin's acceptance of cultural relativism was to confer upon his theory an amorality far removed from the thinking either of Carlyle or of Martineau. Carlyle was protected from such a result by his transcendentalism, Martineau by her unhesitating commitment to perfectibilism, inherited from Priestley and fostered by the revival of ideas of progress that set in in the 1820s and 1830s and gathered pace thereafter. Darwin, with weakened religious views and a limited faith in progress, had only the protection of a degree of social and political idealism. His attitude to slavery shows how this was initially sufficient, but ultimately inadequate, against the amoral implications of cultural relativism.

Darwin returned from the voyage of the Beagle with his intellectual hostility to slavery strengthened by the emotional revulsion he felt when actually staying in places where slavery was practised. The question of slavery, abolished in the British Empire in 1833, was under discussion by Erasmus and his friends. Harriet Martineau had returned from America converted to abolitionism, under the influence of Maria Chapman, a prominent abolitionist who became her friend for life. Harriet used her two American books to argue against slavery, and subsequently wrote a novel, based on the life of Toussaint L'Ouverture, to advance the abolitionist cause. In the Wedgwoods and the Darwins she found a sympathetic audience, but Carlyle rejected her views, on the

grounds that there was no qualitative difference between the wage slavery of the British labourer and the chattel slavery of the American negro. His paternalistic convictions of the duty of leaders to protect and provide for the weaker members of society reinforced the analogy. When the American Civil War began, Froude claimed that Carlyle gave it scant attention: he saw it as "the efflorescence of the "Nigger Emancipation" agitation, which he had always despised."²²

During Darwin's London years, and for some time after, such an attitude held no favour with him. He reacted bitterly to Charles Lyell's casual treatment of the problem of slavery in his Travels in North America:

How could you relate so placidly that atrocious sentiment about separating children from their parents; and in the next page speak of being distressed at the whites not having prospered; I assure you the contrast made me exclaim out. But I have broken my intention, and so no more on this odious deadly subject.

But by the 1860s, the issue of slavery had lost its overriding importance for Darwin, and he determined his attitude to the Civil War on considerations of British interests. Cultural relativism, combined with a belief in a "natural" explanation for social as well as for biological phenomena, ultimately served to remove the question of ethics from the issue of slavery; the objective observer of General Rosas' genocide triumphed over the humanitarian.²³

But if Darwin adopted an amoral stance in his assessment

of social institutions, his personal life continued to be lived under a strong sense of social responsibility, an acceptance of the concept of duty and the need to do good as well as be good that is a common theme in the thoughts and words of so many mid-nineteenth century intellectuals. Darwin's identification with this outlook was also fostered by his participation in the Erasmus circle, whose members subscribed to the same outlook, were all familiar with the Coleridgean idea of the cultural clerisy, and placed great faith in the powers of education to raise the moral standards of society.²⁴

It was in 1830 that Coleridge articulated the concept of a national church, stripped of doctrine, whose function would be the preservation and dissemination of national culture. The church would be presided over by a "clerisy" who would combine the roles of researcher and teacher. The potency of the concept of the clerisy may be explained by the fact that it gave voice to the aspirations of the educated middle class who found in it a new and important role for itself. Nowhere was this more true than among the self-consciously intellectual men of letters and science in London.²⁵

Thomas Carlyle was of crucial importance in popularising the ideas of Coleridge, and of the German philosophy he

admired, among these London intellectuals. Carlyle was dismissive of the romantic poets, referring to Wordsworth in his Journal as a "genuine but a small diluted man". He had still less regard for Coleridge, but his animosity was aroused by what he saw as the man's defects of character, rather than by his ideas: "How great a Possibility, how small a realized Result", he wrote to Emerson on news of Coleridge's death in 1834. His low personal opinion led him to scorn the poet's achievements, even denying him the title of a metaphysical philosopher, insisting that the last man worthy of the name was Dugald Stewart. Yet their ideas had much in common: both had looked to Germany for a refutation of scepticism and materialism, and their common background in German idealist philosophy ensured that Carlyle's work helped to keep alive the romantic tradition.²⁴

The influence of German philosophy and culture on intellectual life in early-Victorian England has commonly been underrated. Certainly, before Carlyle there was very little transmission of German ideas (William Taylor of Norwich, a friend of Harriet Martineau's father, had been responsible for translating and publishing some German texts, but these reached only a small audience.) But the influence of Carlyle and of those whom he inspired ensured a rapid dissemination: J. S. Mill acknowledged his own debt through his reading of Goethe, Coleridge, Carlyle, Sterling and F. D. Maurice. Erasmus Darwin was friendly with Sterling and

Maurice as well as with Carlyle and had himself travelled to Germany to learn more of German culture. Harriet had acquired her enthusiasm for Carlyle in North America, where Sartor Resartus was a literary success and its provincial fame in England is evident from Emma's letter to Fanny Wedgwood in 1837: "Aunt Fanny is in a rapture with Sartor and feels quite convinced that Teufelsdröck is meant for Coleridge, and we want to know from Erasmus whether Mr Carlyle was a friend of Coleridge's". Rosemary Ashton, in her study of the reception of German thought in England, concluded that:

Most of the increasing number of interested readers of German literature and philosophy declared their interest to have begun by reading Carlyle's works, though Coleridge, too, partly through what was Coleridgean in Carlyle, had his share of influence on the awareness of the Victorians of German culture.²⁷

Charles Darwin had access not only to Carlyle's books, which he read avidly, but to his company and that of others well acquainted with German ideas. Even his friend, Charles Lyell, travelling on the continent in the summer of 1837, urged him to be appreciative of the German way:

I mean by German, that kind of frank expression of enthusiasm for science, or of any emotion, which a well-bred Englishman tries to suppress, at least all outward expression of it, from the dread of being thought ridiculous, or of affecting to feel more than he does, or from *mauvaise honte*. If you ever get sick of that fashionable nonchalance which would blush to admire anything, or at least to confess it, I advise you to plunge into Germany, and you will be soon refreshed, and brought back to a right tone again, whether it be literature, science, or any other pursuit you are following.²⁸

Whilst German idealist philosophy found few converts, the influence of German thought in revitalising romanticism, in emphasising the role of individual conscience and the rejection of the traditional authority of Church and Scripture was of great significance. It was conspicuously elitist, conferring upon enlightened intellectuals the duty to foster national culture and to set the ethical standards for society. Carlyle's role was to teach the would-be teachers, and he performed this role in his lectures and in his books. He urged upon his audience the highest moral character and an unceasing commitment to work and to duty. In her autobiography, Harriet Martineau honoured his work and acknowledged its significance:

Bad as is our political morality, and grievous as are our social short-comings, we are at least awakened to a sense of our sins: and I cannot but ascribe this awakening mainly to Carlyle. What Wordsworth did for poetry, in bringing us out of a conventional idea and method to a true and simple one, Carlyle has done for morality.²⁷

The concept of the social and moral responsibility of the intellectual blended well with the Unitarian emphasis on education, nor was it incompatible with the necessitarianism that Harriet Martineau had adopted from Joseph Priestley and that is so closely reflected in Darwin's notes made in the summer and autumn of 1838. Priestley had argued that the complexity of God's motives was beyond man's comprehension, and in default of understanding man must act in accordance with moral canons. He denied that predetermination destroys

the incentive to self-improvement, arguing that necessity was indeed an activist philosophy: as man's conduct follows from his motives, necessitarians may attend to the supplying of better motives through persuasion and education. Free will mattered to Darwin because of its implication of man's ability to transcend natural law: the doctrine of necessity solved his difficulty:

My wish to improve my temper, what does it arise from, but organization, that organization may have been affected by circumstances and education and by the choice which at that time organizations gave me to will - Verily the faults of the father, corporeal and bodily, are visited upon the children.

Again following Priestley, he denied that this undermined morality or incentive to action:

Man thus believing, would more earnestly pray "deliver us from temptation," he would be most humble, he would strive to do good to improve his organization for his children's sake and for the effect of his example on others.

Harriet Martineau meanwhile had a practical answer to the problem:

As to the ordinary objection to the doctrine, - that it is good for endurance but bad for action, - besides the obvious reply that every doctrine is to be accepted or rejected for its truth or falsehood, and not because mere human beings fancy its tendency to be good or bad, - I am bound to reply from my own experience that the allegation is not true. My life has been (whatever else) a very busy one; and this conviction, of the invariable action of fixed laws, has certainly been the main-spring of my activity.³⁰

Whilst Darwin did not refer to Harriet explicitly in his notes on free will, her deep knowledge of the subject, their

frequent meetings during this period, and the coincidence of their views make it reasonable to assume that his discussions with her were useful. He wrote a detailed exposition of his ideas in September 1838 and it reflects very closely the ideas of Harriet:

Every action whatever is the effect of a motive....The general delusion about free will obvious.- because man has power of action, and he can seldom analyse his motives (originally mostly INSTINCTIVE, and therefore now great effort of reason to discover them: this is important explanation) he thinks they have none....

This view undermines the concept of punishment:

it is right to punish criminals; but solely to deter others,..-It is not more strange that there should be necessary wickedness than disease....

Echoing Harriet's mentor, Priestley, he concluded:

This view will not do harm, because no one can be really fully convinced of its truth, except man who has thought very much. and he will know his happiness lays in doing good and being perfect, and therefore will not be tempted, from knowing every thing he does is independent of himself to do harm....Believer in these views will pay great attention to Education.-³¹

Harriet, too, perceived education as an imperative.

"Increase of knowledge is necessary to the secure enlargement of freedom", she wrote in How To Observe. It was an attitude held in common by all members of the Erasmus circle, a group in which was concentrated the complementary influences of Unitarianism and German culture. Harriet Martineau embraced the role of teacher with alacrity. Totally confident of the rightness of her views she undertook the Illustrations of Political Economy and the Poor Law Tales, commissioned by the

Society for the Diffusion of Useful Knowledge (SDUK). The same commitment to education permeated the Wedgwood and Darwin families. Josiah II was himself a member of the SDUK, and had always stressed the importance of education within the family (continuing a tradition set by his father in the days of the Lunar Society). In London in the 1850s his son and daughter-in-law, and his nephew Erasmus, found an outlet for their enthusiasm in the organisation of Bedford College for Women. Its founder was Elizabeth Reid, a close friend of Harriet, and both Hensleigh and Erasmus were trustees of the College, Erasmus serving as Chairman of the Council from its foundation in 1849 until 1869. Fanny was a member of the Council over the same period and a "Lady Visitor", chaperoning students during lectures. Meanwhile, Carlyle preached the universal right to education:

who would suppose that Education were a thing which had to be advocated on the ground of local expediency, or indeed on any ground? As if it stood not on the basis of everlasting duty, as a prime necessity of man.³²

For Charles Darwin the most obvious practical result of these influences was to be seen in his confident appropriation of a paternalistic role after 1842 in the village of Down. Implications as far as his search for a theory of evolution was concerned included the authority conferred upon him to be ambitious in the scale of his enquiries. Darwin's reading programme, and his notebooks of the period show that he did not seek merely to advance

taxonomy, nor even Natural History; he sought to place the study of metaphysics on a new footing, to lay down laws of social organisation, to explain to a wide audience the previously inexplicable. The spirit of free enquiry abroad in Germany, and the self-identification of himself and his friends with a Coleridgean intellectual elite, sanctioned this enterprise. Universalism was, moreover, supported by Darwin's mentor in geology, Charles Lyell, and by the philosophers of science, Professors Herschel and Whewell.

3) Sanctioning interdisciplinarity: Lyell and the philosophers of science

Darwin's admiration for Lyell had first been stimulated by his reading of the Principles of Geology during the voyage of the Beagle; Lyell received his new disciple with enthusiasm, impressed by the Geological Society readings of Darwin's dispatches to Henslow. Before the end of October 1836 the two had met and Darwin subsequently claimed that he "saw more of Lyell than of any other man both before and after my marriage". When one or other was absent from London the relationship was maintained in correspondence: to Lyell Darwin confided the excitement of his species research in the heady days of September 1838 and two months later he was one of the first to be informed of Darwin's engagement to Emma. By the end of his stay in London Darwin's early dependence on Lyell had diminished. Lyell's failure to respond to Darwin's enthusiasm over species, and the strong anti-transmutationist

views he articulated in the Principles weakened Darwin's regard. A fundamental divide existed between the two men, illustrated by Darwin's notebook assertions of the continuity of man and brute. For Lyell this concept was utterly repugnant and in total opposition to his deeply held religious views: the need to refute it dominated his thought. But for Darwin it offered an escape from the disgust aroused in him by his experiences of savage life. Man's development from lower forms enabled him to view savage races as unsuccessful variants doomed to extinction, while civilised man could hope for further improvement. The inability of Lyell and Darwin to enter into each other's sensitivities on this issue placed an insuperable obstacle to any real agreement between them. Although the extent of their differences did not become apparent until the 1860s, already in July 1841, as Lyell embarked on his journey to North America, he remarked on the change in their relationship, which he attributed to Darwin's poor health:

I cannot tell you how often since your long illness I have missed the friendly intercourse which we had so frequently before, and on which I built more than ever after your marriage.

Despite the change in their relationship, Lyell became a welcome visitor at Down and was one of the first to be admitted to the details of natural selection; he repeatedly urged Darwin to publish and, with Hooker, arranged for the joint presentation of the Wallace-Darwin papers at the Linnean Society.³³

When Darwin arrived in London, Lyell was important to him not only because of the geology he learned from him, but also because of Lyell's ideas about science and the methodology of scientific theorising. He symbolised for Darwin the determination to be independent in thought and to make natural history the focus of his life. He listened to Lyell's warnings about frittering away his time on socialising and to his advice regarding the dissipation of energy involved in office-holding. He admired Lyell's willingness to criticise the Church Establishment, commenting of Travels in North America: "I am surprised throughout at your very proper boldness against the clergy." Lyell attended a Unitarian chapel and his views on the good to be found in all forms of Christian worship echoed to some extent the cultural relativism of Harriet Martineau: in 1832 he had written to his fiancée, Mary Horner:

I have sometimes thought that if all the world should become Christian and be as divided into sects as we now are, and as tolerant as the Prussians, we should come round once more to the opinion of the Romans who most sincerely believed that "all religions were true" -- that the gods or saints of all and every people were their gods, and that their forms of worship were true, and worthy of veneration, tho - some more and some less.³⁴

Lyell too was a committed supporter of popular education, and took an active interest in politics, though avoiding personal participation because of his determination to devote his energy to science. Of the Factory Bill in 1834, he wrote that it might do good, "especially in respect to

education, the chief point in which I conceive governments to have a right to interfere, or rather a duty." He was, moreover, a personal friend of Carlyle (as was Richard Owen) and of Harriet Martineau. He visited Harriet frequently while she was in London, and continued to read her books and talk of her affectionately after her departure. Of Eastern Life (1848), in which she set out her developmental view of religion, he wrote that "If Harriet should be excommunicated for certain doctrines boldly put forth in this the most able work she has produced, it is certainly better worth being a martyr for than her mesmerism." In her autobiography Harriet remembered him as having "a Scotch prudence which gave way, more and more as years passed on, to his natural geniality, and to an expanding liberality of opinion and freedom of speech."³⁵

Lyell's enthusiasm for intellectual debate was an abiding characteristic. In the 1820s he had been a founder member of the Athenaeum Club; his admiration in the late 1830s for German culture has already been noted, and a decade later he was a founder, with Hooker, of the Philosophical Club of the Royal Society, whose monthly meetings Darwin attended when his health allowed. Lyell was a multidisciplinarian, putting multidisciplinarity to the service of his science. He used analogies and metaphors drawn from the fields of linguistics and political economy, from history and demography; in so far as his work was approved in

geological circles, he conferred a legitimacy upon the use of general cultural sources. An example of the use of human analogy is to be found in the Principles, volume II:

A faint image of the certain doom of a species less fitted to struggle with some new condition in a region which it previously inhabited, and where it has to contend with a more vigorous species, is presented by the extirpation of savage tribes of men by the advancing colony of some civilised nation.

Darwin would have had this volume with him as he witnessed General Rosas's war of extermination against the Indians: it would be difficult to find a more forceful example of Lyellian struggle in operation.³⁴

Lyell was a deeply religious man whose intention it was to promote science without damaging religion. He argued that the problem of ultimate purpose or origin was beyond the power of human comprehension, and outside the scope of reason: actualism did not deny the Creation, but acknowledged the impossibility of incorporating it within a framework of the known operation of Nature. Lyell implied that an attempt to do so was in fact to restrict God's omnipotence, an instance of arrogance on man's part (a sentiment shared by Carlyle). Speaking in King's College in 1832, Lyell expressed his conception of the infinite character of God's powers:

Why then should we not be prepared to expect from analogy that, as the Author of Nature has not permitted man by the aid of his feeble power to scan the limits of the universe as regards space, so also he may have hidden from us the limits of past time as regards the history of our planet. After tracing worlds beyond worlds we still see countless other systems on the

confines of the visible universe. There is no termination to the view of that space which is filled with manifestations of Creative power: Why then after tracing back the earth's history to the remotest epochs should we anticipate with confidence that we shall ever discover signs of the beginning of the time that has been filled with acts of the same creative power?

In effect God's power is so great that he has no need to make use of miracles, nor is man's understanding sufficient to comprehend that power. The most he can do is to observe and apply those secondary laws by which the universe is regulated. In the M notebook, Darwin recalled that the Fuegian savages considered thunder and lightning the direct will of God:

Those savages who thus argue, make the same mistake, more apparent however to us, as does that philosopher who says the innate knowledge of creator (is) /has been/ implanted in us (?individually or in race?) by a separate act of God, and not as a necessary integrant part of his most magnificent laws. which we profane in thinking not capable to produce every effect of every kind which surrounds us.

This passage was written in the context of a reference to Comte: Darwin's enthusiastic recommendation to Lyell of Brewster's review was perhaps occasioned by the parallels he perceived in Lyell's position and that of Comtean positivism.³⁷

Lyell further argued that his view projected a God more powerful, more worthy of praise than that projected by conventional natural theology. His theory of successive creations required a superior degree of foreknowledge on the part of the Creator, in order to equip those species for

future changes in their environment. And Darwin, in the conclusion to the Sketch of 1842, after stating that the establishment of secondary laws to govern the creation and extinction of species "accords with what we know of the law impressed on matter by the Creator, added that "the existence of such laws should exalt our notion of the power of the omniscient Creator." Lyell and Darwin shared a heterodox religious position and a strategy for neutralising the potentially damaging effects of that position.³⁸

The choice of Lyell as mentor in Darwin's years in London was apt: Lyell had thought deeply on metaphysical questions and had found a way of reconciling them with a concept of science that rejected theological control; he had speculated on the origins of organic species, and whilst rejecting transmutation, considered it a valid field of study; he combined a determination to professionalise his subject with wide interests in politics and society, and believed in the validity of transferring concepts elaborated in one context to serve his enquiries in another. Notwithstanding the shadow placed on their friendship following the publication of the Origin, the sketch drawn by Darwin in his Autobiography was affectionate, and concentrated on the areas of agreement between them:

His delight in science was ardent, and he felt the keenest interest in the future progress of mankind. He was very kind-hearted, and thoroughly liberal in his religious beliefs or rather disbeliefs; but he was a strong theist. His candour was highly remarkable. He exhibited this by becoming a convert to the Descent-

theory, though he had gained much fame by opposing Lamarck's views, and this after he had grown old. He reminded me that I had many years before said to him, when discussing the opposition of the old school of geologists to his new views, "What a good thing it would be, if every scientific man was to die when 60 years old, as afterwards he would be sure to oppose all new doctrines." But he hoped that now he might be allowed to live.³⁹

Lyell's commitment to universality, his eclectic approach and his use of social analogy are readily charted. But Darwin still needed to meet the requirements of key philosophers of science if he were to have confidence that his methodology reached the standards of professionalism to which he aspired. Philosophy of science in the 1830s was dominated by John Herschel, a champion of Lyellian geology, and by his friend, William Whewell. Susan Cannon has identified Herschel and Whewell as members of a network of intellectuals, straddling London and Cambridge, for whom natural science provided a "norm of truth". Encompassing Sedgwick, Henslow, Babbage and other prominent devotees of natural history, it also included men like Tennyson, F. D. Maurice, John Sterling and other members of the Cambridge "Apostles". They too subscribed to a belief in the unity of truth and the universality of Law: scientific metaphor coloured poetry, and literary and scientific writers employed a common language. Literature could critically review scientific developments just as science could inform literature.⁴⁰

Darwin read Herschel's Preliminary Discourse on the Study of Natural Philosophy while at Cambridge in 1831. He reread it in the winter of 1838-9, by this time personally acquainted with its author. Essentially, Herschel's methodology was a *via media* between Whewell's dependence on *a priori* conceptions, which could lead to error, and the aridity of pure empiricism which placed unacceptable limits on the scope of scientific enquiry. Herschel's ideal of a fundamental law was Newton's law of gravity. A fundamental law must be capable of explaining a wide range of phenomena, including phenomena not considered in the construction of the theory, or considered to be hostile at that stage. It must have explanatory value, and it must be sufficient: it must explain the range of phenomena within its scope without recourse to any further agency. Analogy was of especial importance in the matter of verification: in the Discourse Herschel cited Lyell's theory of climate (to which Darwin had converted on reading the Principles of Geology) as an example of the power of analogy in establishing the truth of a "vera causa". In the Sketch of 1842, and in the Essay of 1844, Darwin employed a structure and methodology designed to meet Herschel's recommendations: he set forth a hypothesis under which transmutation became a possibility, and then proceeded upon verification by analogy. But his attempt to reconcile the conflicting demands of all-sufficiency and monocausality, exposed him to real difficulty. His failure to match

Herschel's strict requirements, as evidenced by Herschel's reputed characterisation of the theory following publication as the "law of higgledy-piggledy", was a great disappointment to him.⁴¹

Herschel had himself speculated on the question of origins and raised the matter in a letter to Lyell that was openly discussed in scientific circles and subsequently published. He wrote, in February 1836:

I allude to that mystery of mysteries the replacement of extinct species by others...we are led by all analogy to suppose that he (the Creator) operates through a series of intermediate causes and that in consequence, the origination of fresh species, could it ever come under our cognisance, would be found to be a natural in contradistinction to a miraculous process - although we perceive no indications of any process actually in progress which is likely to issue in such a result.

Notwithstanding his reservations about the status of Darwin's evolutionary theory, he was disposed to be sympathetic to the Origin, commenting that "we are far from disposed to repudiate the view taken of this mysterious subject in Mr Darwin's book." Sharing a common approach to geology, sympathetic to his quest, and offering a methodology that endorsed the use of hypothesis and analogy, Darwin did not have to feel that his speculation was doomed *ab initio* in the eyes of one for whom he had the greatest respect.⁴²

Darwin first became acquainted with William Whewell in Cambridge, where he, like Darwin, attended Henslow's weekly scientific evenings. Darwin built on this relationship

during his London years when it was at Whewell's bidding that he took on the office of Secretary of the Geological Society. He studied closely Whewell's History of the Inductive Sciences and his Bridgwater Treatise, first published in 1833. Whewell, himself a noted polymath, was more involved in the question of the relationship between science and religion, and in metaphysics generally, than was Herschel. He rejected Herschel's notion of the vera causa on the grounds that

it forbids us to look for a cause, except among the causes with which we are already familiar. But if we follow this rule, how shall we ever become acquainted with any new cause? Or how do we know that the phenomena which we contemplate do really arise from some cause which we already truly know?

For this reason Whewell went further than Herschel in his support for the role of hypothesis in scientific research. He attacked actualism on the grounds of its insufficiency to explain geological phenomena; Lyellian "uniformitarianism", he believed, relied on an *a priorism* that could not be justified. There were no scientific grounds for the assumption that all past events had been governed by laws now in operation. Therefore he would not deny miracles and committed himself to "catastrophism". Many of Whewell's ideas were diametrically opposed to Darwin's, but his philosophy of science involved few points of conflict. Michael Ruse has argued that Whewell's differences with Herschel on methodological questions were more apparent than real. He

shared Herschel's view that Newtonian law was the model to which a theorist should aspire, and, like Herschel, laid great store by the ability of a theory to explain a wide range of unconnected phenomena: verification was to be established through the process of "consilience of inductions".⁴³

Darwin tried hard to realize the criteria of a fundamental law laid down by the philosophers of science. The references to Newton's work in his notebooks show that he accepted the Newtonian paradigm. His attempts at verification through the application of his theory to an unlimited range of phenomena, seen in the notebooks and in the Sketch, Essay and the Origin itself, reflect his understanding of Whewell's consilience of inductions and of Herschel's not dissimilar methodology. But as well as prescribing strict standards of practice, they conferred upon Darwin a much greater latitude in his use of resources than would have been permissible a generation later. Their universalism, their faith in the use of analogy and their legitimation of the role of hypothesis in the construction of a theory gave Darwin the freedom to employ the wide range of sources which family, friends, and personal experience had set at his disposal.⁴⁴

4) Conclusions

In the 1830s the question of species' origins was a matter for debate within advanced intellectual circles: it

was not purely or even mainly a scientific concern, and men of science shared a common language with other intellectuals. A generation later Darwin was rebuked by Alfred Russel Wallace among others for his personification of Nature and Natural Selection; but his appreciation of the metaphysical ambiguities arising from such personification could not overcome the fact that this was his language, the language in which the theory had been devised and first expressed. There was no linguistic barrier between arts and science, nor any real substantive barrier between the different disciplines within science. As Lyell said, the scientist in this early period was "a smatterer in everything". It is evidence of the degree of change over the next half century that Darwin's son Francis found his father's eclecticism remarkable: "In the non-biological sciences he felt keen sympathy with work of which he could not really judge. For instance, he used to read nearly the whole of "Nature", though so much of it deals with mathematics and physics." To Francis, editing his father's letters in 1887, this use of a common language was an anomaly:

I have always felt it to be a curious fact, that he who has altered the face of Biological Science, and is in this respect the chief of the moderns, should have written and worked in so essentially a non-modern spirit and manner. In reading his books one is reminded of the older naturalists rather than of the modern school of writers. He was a Naturalist in the old sense of the word, that is, a man who works at many branches of science, not merely a specialist in one....The reader feels like a friend who is being talked to by a courteous gentleman, not like a pupil being lectured by a professor.

It was precisely this cultural unity that enabled Darwin to tackle a question which, however much effort he subsequently put into defining it in strictly scientific terms, was inextricably linked with wider issues of religion and society.⁴⁵

Darwin's species speculation depended on the "common intellectual context" that existed in the 1830s. This made it possible for him to draw material not only from areas of natural history which a generation later would have been all but inaccessible as a result of the demarcation of distinct disciplines, but also, and just as importantly, from philosophers, political economists, etymologists, clerics and poets. Yet even as he made use of these diverse sources, available both in printed form and through personal acquaintance, the emergence of an insistence by scientists on the autonomy of science, was undermining that 1830s consensus. Manier drew attention to the way in which this development was reflected in Darwin: "When Darwin began, as he did in 1838, to utilize positivist themes in constructing his self-image as a scientist, he did so with the uneasy inconsistency of a transitional or marginal figure." By the time the Origin was published, the "fragmentation" of the "common context" had proceeded to the extent that the sources upon which his speculative work had drawn could no longer be legitimately credited with a role in the construction of a scientific theory.⁴⁶

To the young Darwin, family, experience and colleagues in the study of natural history had all conferred a legitimacy on the use of every kind of source material in the search for answers to the question of origins. The "norm of truth" provided by natural history lent science authority to judge on social matters. Charles Lyell was commended by the Athenaeum in 1849 for his ability "to carry with him the best habits of scientific observation into other strata than those of clay, into other "formations" than those of rock or river-margin." On this Darwin commented to Lyell, "I quite agree with the Athenaeum that you have shown how a man of science can bring his powers of observation to social subjects." Science could throw light on social dynamics, and society could provide the raw material for the development of scientific understanding. The huge amount of reading materials consulted by Darwin could be filtered, and the useful essence extracted, by means of testing the ideas it generated against the arguments that he and his friends, as well as the evidence provided by his own research, could bring to bear. It was Darwin's method, as seen in the transmutation and metaphysical notebooks, as seen in the Journal of Researches and as seen in the Origin itself, to exploit personal experiences and personal relationships both in developing his theories and in illustrating them for public consumption. In this way, the wider cultural environment, made accessible to him by his friends in London during the formative period of his theory of transmutation, was constitutive of that theory.⁴⁷

NOTES TO CHAPTER 4

- 1 A prominent example of the demise of the positivist consensus is provided by Stephen J Gould, himself an eminent working naturalist. In Ever Since Darwin, 1978, p. 44, he wrote, "I am a strong advocate of the general argument that "truth" as preached by scientists often turns out to be no more than prejudice inspired by prevailing social and political beliefs. I have devoted several essays to this theme because I believe that it helps to "demystify" the practice of science by showing its similarity to all creative human activity." (p44)
- 2 Hensleigh Wedgwood turned down repeated requests by his father to join the family business because he would not leave London; Harriet Martineau came to London against the express wishes of her domineering mother; Thomas Carlyle forsook his native Scotland and exiled his wife from family and friends for the sake of the intellectual stimulation to be found only in London. On the common language of men of letters and men of science, see Gliserman, 1975, Rudwick, 1979, and Beer, 1983. For Carlyle's use of scientific analogy, see, for example, Sartor Resartus, pp. 6, 83. Darwin's faith in a scientist's competence to speak on matters of philosophy is expressed in N 5.
- 3 Manier, 1978, pp. 37-40, 40-7, 58-64, 89-96.
- 4 Ibid., p. 186.

- 5 Beer, 1985, p. 546; Beer, 1983, p. 50. Beer suggests that the omission of man from the Origin served the polemical purpose of reinforcing Darwin's denial of man's special place at the summit of the organic hierarchy (Beer, 1985, p. 581).
- 6 Autobiography, p. 49; confirmation of Darwin's familiarity with Milton during the voyage may be seen in his letter to Henslow, 26 October 1832, Correspondence, 1, 280; Beer, 1983, p. 36, and see Beer, 1985, p. 553.
- 7 Erasmus Darwin, The Temple of Nature, quoted in Keegan and Gruber, 1983, p. 19. Another example of different sources conducing to the same result may be seen in the issue of the effect of invasion on indigenous populations. Beer sees Scott's Waverley as possibly providing a model for Darwin, to parallel the example he had himself witnessed in Patagonia (Beer, 1985, p. 567). Malthus's An Essay on the Principle of Population similarly offered descriptions to match Darwin's experience.
- 8 For family background see Wedgwood, 1980; for the Lunar Society see Schofield, 1963.
- 9 Garfinkle, 1955. Poetry continued to be purposive under the influence of the Romantics, but directed at moral rather than practical instruction (Heyck, 1982, pp. 42, 191). Darwin wrote to his sister Catherine, on 22 November 1846, that their grandfather was "the talk of London" (Colp, 1986b, p. 4).

- 10 Erasmus Darwin, The Temple of Nature, quoted in Gale, 1972, p. 325; Gruber and Barrett, 1980, p. 39, n. 29 and see Darwin to Caroline Darwin, 19 May 1837, Correspondence, 2, 19. Zoonomia quoted in Gruber and Barrett, 1980, p. 95, n. 171; Darwin to Hooker, 11 January 1844, ML, I, 41.
- 11 Autobiography, p. 26. Krause, 1879, pp. 43-4. Erasmus Darwin had published a treatise on scientific agriculture, Phytologia, and Josiah put many of the ideas contained therein to practical use (Schweber, 1985, p. 54). The excised passage from Darwin's biographical preface is quoted in Colp, 1986b, p. 13: Colp found that Darwin derived considerable intellectual self-confidence from his relationship to his grandfather.
- 12 Schofield, 1963, shows that the conventional image of the early industrialists as mere scientific amateurs is mistaken: these were serious natural philosophers engaged in a cooperative research programme; see also McKendrick, 1973, Wedgwood, 1980, p. 113 and passim, Keegan and Gruber, 1983, pp. 18-9; reference to the loan to Wordsworth is to be found in letters between Josiah and Wordsworth at Keele, W/M 52; on the science of Tom Wedgwood see Schofield, 1963, p. 420.
- 13 Maer was described in 1819 as a place where "you may do as you like; you are surrounded by books that all look most tempting to read; you will always find some

- pleasant topic of conversation or may start one, as all things are talked of in the general family...": Emma Caldwell's Journal, 1819, quoted in Emma Darwin, I, 60.
- 14 Schofield, 1963, p. 356; Emma Darwin, I, 182; Wedgwood, 1980, pp. 219-220.
- 15 Darwin to Henslow, May 1832, Correspondence, 1, 238; Barlow, ed., 1933, p. 74; Erasmus Darwin to Darwin, 18 August 1832, Correspondence, 1, 259.
- 16 Diary entry for 12 March 1832 in Barlow, ed., p. 43; Autobiography, p. 42; diary entries for 16 August 1833, 4-7 September 1833 in Barlow, ed., pp. 164 and 171-2.
- 17 Autobiography, pp. 48, 63.
- 18 Francis Darwin recalled that "For books he had no respect, but merely considered them as tools to be worked with": LLD, I, 150.
- 19 Autobiography, p. 49; LLD, III, 149n and see Darwin to Hooker, 24 July 1869, ML, I, 313. Darwin to Lyell, 14 September 1838, Correspondence, 2, 104; the phrase "its law being progress" apparently refers to a renowned article by Macaulay on Bacon published in the Edinburgh Review in 1837 (Mrs Lyell, ed., 1881, II, 33); Vorzimmer, 1977, amended by Beer, 1985, p. 588 n1; Darwin to a correspondent, 8 April 1872, in American Philosophical Society, Philadelphia.
- 20 Martineau, 1838, pp. 22-27; M 75-6, M 142 and see M 151.
- 21 Quoted in Clubbe, ed., 1976, p. 95; Carlyle, Chartism, p. 45.

- 22 Prior to her visit to the US, Harriet had opposed abolitionism because of its reputed willingness to act outside the law. For similar reasons she did not for some time join the Anti-Corn Law League despite her dedication to the cause of free trade. As with Darwin and other intellectuals of the period, the public expression of private beliefs was subject to a judgement about the potentially destabilising effects of such expression; Pichanick, 1982, p. 87, suggests that it was the refusal of church leaders in America to take a stand against slavery that sowed the seeds of Martineau's scepticism. Froude, 1902, II, 266.
- 23 Darwin to Lyell, 25 August 1845, LLD, I, 341-2; Lyell adopted a classic apologia for slavery in suggesting that the negro belonged to a separate species from the white man: Lyell to Leonard Horner, 26 August 1841, Mrs Lyell, ed., 1881, II, 55. Darwin commented on this argument in B 231; his attitudes to slavery and the Civil War are examined by Colp, 1978.
- 24 The concept of duty, and the activism implied by the acceptance of responsibility for the well-being of society, provided a common ground for people with widely differing views: it was Carlyle's expression of this sentiment in Sartor Resartus that won Harriet Martineau's admiration, notwithstanding their differences over slavery etc. (Pichanick, 1982, p. 44.

- 25 Coleridge, "On the Constitution of Church and State", 1830. Morrell and Thackray have drawn attention to the influence of Coleridge upon the "gentlemen of science". Coleridge was lionised at the 1833 meeting of the BAAS, where it was in response to his rejection of the title of philosopher to describe a man of science that Whewell coined the term "scientist". (Morrell and Thackray, 1981, p. 20.)
- 26 Carlyle's Journal entry, 26 May 1835, in Froude, 1902, I, 47; Carlyle to Emerson in Sanders, 1977, p. 47; *ibid.*, pp. 45, 60; see also Carlyle, Past and Present, p. 292.
- 27 Mill, 1971, p. 97 and Collected Works, XII, 85, 111; cf. Altick's denial of German influence, citing J. S. Mill as unaffected by Germanism (Altick, 1974, p. 189.) Sterling and Maurice were both, like Erasmus, members of the Cambridge Apostles. Emma Wedgwood to Fanny Wedgwood, 23 May 1837, Emma Darwin, I, 276; Ashton, 1980, p. 104.
- 28 Lyell to Darwin, 29 August 1837, Correspondence, 2, 41.
- 29 Martineau, 1983, I, 387. The term "intellectual" is used in the uneasy knowledge that it did not come into usage until the 1870's (Heyck, 1982). However it was in this period that a selfconscious intelligentsia began to emerge.
- 30 M 73 and 74; Martineau, 1983, I, 111.
- 31 QUN 25-7; a similar commitment to education is in C 220, written a few months earlier.

- 32 Martineau, 1838, p. 203: faith in the perfectibility of man through education is a constant theme in Martineau's work (Pichanick, 1982, p. 14). The early years of Bedford College were fraught with problems, in particular over the religious persuasions of its teachers: its history, and the role played by Erasmus and the Wedgwoods is told in Tuke, 1939. Carlyle, Chartism, p. 59.
- 33 Darwin to Lyell, 14 September 18 and 12 November 1838, Correspondence, 2, 107, 114. Following his letter in September 1838, Darwin rarely mentioned his species views to Lyell (Colp, 1986a, p. 12). On the divide between them see Descent, p. 946, discussed by Campbell, 1974, pp. 171-2 and cf. Bartholomew, 1973, p. 293. Lyell to Darwin, 16 July 1841, Correspondence, 2, 299. In the years following publication of the Origin the anguish caused to Lyell in his attempts to reconcile his views with Darwin's is evident in his correspondence: see Lyell to Darwin, 2 May 1860, Wilson, ed., 1970, p. 382, Lyell to Hooker, 9 March 1863, and Lyell to F. P. Cobbe, 20 July 1873, Mrs Lyell, ed., 1881, II, 361, 452.
- 34 Lyell to Darwin, 26 December 1836, Correspondence, 1, 532; Darwin to Lyell, 1 August 1845, LLD, I, 339-40 and see N 19e; Lyell to Mary Horner, 21 April 1832, Mrs Lyell, ed., 1881, I, 37.
- 35 Lyell to Leonard Horner, April 1834, Mrs Lyell, ed.,

- 1881, I, 405; Lyell to Bunbury, 2 August 1848, Mrs Lyell, ed., 1881, II, 147; Martineau, 1983, I, 355.
- 36 Rudwick, 1979; Principles of Geology, II, 175 quoted in Gale, 1972, p. 222.
- 37 Rudwick, 1976, pp. 148-9; M 136.
- 38 Lyell to Sir John Herschel, 1 June 1836, Mrs Lyell, ed., 1881, I, 467-8, cf. Sketch, pp. 86-7.
- 39 Autobiography, pp. 58-9.
- 40 Cannon, 1978; see also Gliserman, 1975: Gliserman depicts In Memoriam as a debate between Whewell's vision of an orderly, benign universe, and Lyell's one of an amoral, lawbound universe. Tennyson's early poetry is revealing for the developing critique of anthropocentrism: see The Two Voices 1832.
- 41 Darwin's 1831 reading of Herschel dated by Ruse, 1975, p. 164. The following discussion is indebted to Ruse, 1975, 1976, and 1978 and Thagard, 1977. Darwin to Lyell, 10 December 1859, Calendar 2575.
- 42 Herschel's letter, 20 February 1836, and Lyell's reply, 1 June 1836 are quoted in Wilson, 1972, pp. 438-9; Herschel's comment on the Origin is quoted in Ruse, 1975, p. 181.
- 43 Whewell, Philosophy of the Inductive Sciences, II, 441-2 quoted by Ruse, 1976, p. 128; Ruse, 1975, p. 163; see also Brooke, 1977. Darwin's friendship with Whewell is shown in his letters to him, 10 March 1837 and 16 February 1839, Correspondence, 2, 10, 174. Whewell gave to Charles and Emma, as a wedding gift, his own

translation of Goethe's Herman and Dorothea. In thanking him for this gift, Darwin expressed his admiration for the History of the Inductive Sciences which he had just finished reading: Darwin to Whewell, 16 April 1839, Correspondence, 2, 186; on the range of Whewell's interests see Young, 1985a, p. 137. The importance of Herschel and Whewell to Darwin is indicated by the frequent allusions to them in the notebooks: Manier, 1978, p. 20. Whewell, too, had speculated on species' origins: Lyell to Herschel, 24 May 1837, Mrs Lyell, ed., 1881, II, 12.

44 B 101, C 123, D 36, N 36, 71; Thagard, 1977, p. 355.

This interpretation is at odds with the conventional view of contemporary hostility to theorising: Rudwick, 1982, shows how licence to theorise was granted to the elite corps of practitioners.

45 Lyell described a dinner party at which the question of species' origins had been discussed in a letter to his sister Sophie, 19 March 1837, Mrs Lyell, ed., 1881, II, 8. The question of species origins was of course also discussed widely in the circles of freethinkers and popular radicals: see Desmond, 1988. Wallace to Darwin, 2 July 1866, ML, II, 268; LLD, I, 127, 155-6.

46 On the "common intellectual context" see Young, 1985a, pp. 126-163: Young attributes to natural theology the unifying role, and consequently its fragmentation to the demise of natural theology. The Erasmus circle provides

a good example of how common intellectual aspirations allowed the tolerance of widely differing views: subsequent fragmentation occurred as specialisation and professionalisation became a characteristic not only of science, but of all areas of human enquiry. Manier, 1978, p. 86.

- 47 Athenaeum review, 23 June 1849 and Darwin to Lyell, 3 July 1849, ML, II, 225; on Darwin's ability to convert diverse forms of experience to speculative use, see Keegan and Gruber, 1983, p. 16.

RELIGION

When Darwin entered Cambridge University in 1828 to prepare for his career in the church, Paleyan natural theology held sway. An admirer of Adam Smith and Malthus, Paley had written his books in the context of the Napoleonic Wars and the insecurity engendered by them. The books were intended to show that God's universe was ultimately benign, that every aspect of it was designed to his prescription and that stasis and balance were its hallmarks. As British society was transformed at an ever increasing speed under the pressures of industrialisation and urbanisation, with a new and increasingly populous middle class demanding a religion and political philosophy that reflected its economic dominance, Paley's writings, and traditional interpretations of the Scriptures, appeared ever more anomalous, whilst retaining the sanction of the Established Church. But through the middle decades of the nineteenth century Paley and church doctrines were under attack, and the coincidence of the appearance of the Essays and Reviews by Broad Church theologians within months of Darwin's Origin of Species has acquired symbolic importance in the long-standing debate on the relationship between religion and Darwinian theory.

To Darwin's contemporaries there was a clear

appreciation that evolutionary schemes were intrinsically unorthodox. As church and government threw up the defences against radicalism at the outset of the nineteenth century, the ideas of Dr. Erasmus Darwin, previously unchallenged on religious grounds, were singled out for attack in the government inspired periodical, the Anti-Jacobin. The work of Lamarck was similarly repudiated on the grounds of its materialism, its scientific value ridiculed by the conservative Cuvier who orchestrated the critical response in France. Nor did Establishment hostility to transmutation recede as the years passed: in the 1830s Darwin's erstwhile teacher at Edinburgh University, the zoologist Dr Grant, sustained considerable professional damage as a result of his known adherence to Lamarck's views. The association of transmutation with infidelity and popular radicalism sufficed to deter most investigators from studying the subject too closely, and to encourage others like Richard Owen, heavily dependent on Establishment support, actively to work towards its defeat. These contemporary attitudes have framed the traditional question of whether Darwin's heterodoxy was a necessary precondition of his scientific speculation or whether the result of that speculation induced a loss of faith.¹

The extreme concern of Darwin's wife Emma has reinforced the view of a major upheaval in his religious views coinciding with his species speculation. Even before their

marriage she voiced her fears. Charles, against his father's advice, had confided to her his doubts and she responded with a request that he should read the 13th Chapter of John. "My reason tells me that honest and conscientious doubts cannot be a sin, but I feel it would be a painful void between us", she wrote. A few days before their marriage, she voiced her hope that "though our opinions may not agree upon all points of religion we may sympathise a good deal in our *feelings* on the subject." Finally, the following month, she wrote a long letter in which she pleaded with her husband to preserve an open mind and not to allow the precedent of Erasmus to influence him. She feared that scientific pursuits had an intrinsic tendency to lead to disbelief: "May not the habit in scientific pursuits of believing nothing till it is proved, influence your mind too much in other things which cannot be proved in the same way, and which if true are likely to be above our comprehension." Her genuine distress at the possible implication of Darwin's scepticism is evident, "Everything that concerns you concerns me and I should be most unhappy if I thought we did not belong to each other forever". Darwin was deeply moved by Emma's concern: on the final letter he appended the message, "When I am dead, know that many times, I have kissed and cried over this. C.D."²

The chronology of Darwin's religious views, developed in

support of the view that his science undermined his faith, was advanced by Maurice Mandelbaum in 1958: according to this chronology, Darwin retained an orthodox faith throughout the Beagle years; under the impact of the conflict between Genesis and geology, and in the wake of his acceptance of transmutation, Darwin rejected Christianity; he remained a theist until the immediate post-publication period of 1860-1, when debates occasioned by the Origin forced him to reassess his position. He became an agnostic, gradually drifting into atheism as the conviction grew that man could not trust his own instincts on such matters. Revisions of Mandelbaum's chronology, and debates about the precise quality of Darwin's religious views at any given moment have tended to preoccupy historians interested in the relationship between his science and his religion ever since.³⁵

Whilst Mandelbaum's conviction of Darwin's ultimate atheism has been challenged, the general idea of the undermining of his Christian faith by his theory has received support from many historians, including Dov Ospovat in The Development of Darwin's Theory. Ospovat agreed with J. R. Moore in viewing the structure of natural theology as providing the framework within which Darwin elaborated his ideas, and proceeded to argue that the consequence of natural selection was for Darwin the renunciation of the idea of a plan of creation; Darwin became, in the words of John C. Greene, an "evolutionary deist". For Manier, by contrast, it

was the scepticism induced by Darwin's reading of Hume and Comte, coupled with the pantheism absorbed from Wordsworth, that enabled him to make sense of his transmutationist theories. Manier's case is weakened, in so far as it makes heterodoxy a prerequisite of evolutionary belief, by the subsequent accommodation of the Established Church to Darwinism, outlined by Moore in The Post-Darwinian Controversies. This accommodation has been interpreted as evidence of the orthodox ancestry of Darwin's theories. J. H. Brooke has attempted to reconcile these apparently contradictory approaches. Confirming that the rejection of the doctrines of natural theology was neither a necessary precondition, nor a necessary result of the discovery of natural selection, Brooke argues for a more comprehensive approach to Darwin's religious views, emphasising the "mutual interactions" between his science and his faith. The result is a catalogue of personal, cultural, and scientific factors, the combination of which both directed the decline of Darwin's religious views and the shape of his evolutionary thinking.⁴

Whilst other studies have persisted in the attempt to give precise definition to Darwin's religious views, they have tended only to confirm the impossibility of that task. Darwin's stated opinions on the subject were so often equivocal and to the end of his days he vacillated over the validity of the First Cause argument and the improbability of the Universe developing by chance. More helpful in the effort

to discover the relationship between his science and his religion has been the attempt to look at Darwin's ideas in the context of those of other early-Victorian intellectuals. In the course of such a study, Moore has listed contemporaries of Darwin who suffered a "crisis of faith", many of whom were known to him personally, or vicariously through his close friends. They included Francis Newman, whose Phases of Faith was read and considered "excellent" by Darwin in 1851. Newman was a close friend of Fanny Wedgwood, was associated with Erasmus in the founding of Bedford College, and was a co-signatory with him, and Hensleigh Wedgwood and others of the petition against oaths presented to the House of Lords in the 1850s. Also on Moore's list was Darwin's Cambridge contemporary, Alfred Tennyson who was a frequent visitor to the Carlyles in Cheyne Row during his occasional sojourns in London and subsequently a close friend of T. H. Huxley. Harriet Martineau comes first on the list, and Carlyle's name might well have been added although he had undergone his own spiritual crisis much earlier in the 1820s.³

One characteristic shared by all the intellectuals listed by Moore was the determination to explore and analyse their metaphysical difficulties rather than to disguise and conceal them. Darwin's years in London were thus spent among people for whom Christian faith was a vital issue. Carlyle emerged from his crisis a vehement believer though his belief

defied definition; Harriet Martineau, although primarily renowned for her works on political economy was deeply involved in religious issues and during her years in London maintained her Unitarian observance; Hensleigh Wedgwood was at the height of his crisis of conscience about the interpretation of the Scriptures; his wife Fanny was a passionate worshipper, much influenced by her half-sister Mary Rich, and Erasmus was a freethinker, with a strong interest in metaphysics. The precise nature of Darwin's beliefs in this period was of less importance for the development of his theories than the opportunity afforded him by his own interest and that of his friends to develop a world view that would assuage the anxieties arising from a loss of confidence in orthodoxy.

1) The Divisions within Natural Theology

One element in the heightening of religious doubt in the early-Victorian period was the internal disintegration of natural theology. Formerly viewed as a monolithic body of thought exercising hegemony over all but unbelievers, it has increasingly been seen to have been challenged from within, and seriously weakened as a result, during the early decades of the nineteenth century. Four important areas of debate can be identified: the commitment to a static, unchanging universe, maintained by the balance of nature; the extent of God's personal intervention in the operation of the universe; the belief that it was designed expressly for man; and the

reductionism implied by the use of the analogy of the machine.⁶

In Natural Theology Paley wrote that "not a single species, perhaps, has been lost since the creation", and of water that there was "not one drop probably more or less now, than there was at the creation". Paley was committed to stasis, a stasis maintained by the balance of nature which was the product of God's carefully designed plan of creation. This view of the balance of nature, and of design, undoubtedly permeated much of the work of natural historians in the early-nineteenth century; Lyell's geology was itself framed by the presupposition of balance and stasis. The corollary for Paley was the rejection of evolution:

that the eye, the animal to which it belongs, every other animal, every plant...are only so many out of the possible varieties and combinations of being which the lapse of infinite ages has brought into existence, that the present world is the relic of that variety; millions of other bodily forms and other species having perished, being by the defect of their constitution incapable of preservation...now there is no foundation whatever for this conjecture in anything which we observe in the works of nature..."⁷

Paley's position was challenged on two counts. Firstly the theology that underlay his commitment to stasis was by no means universally accepted. Liberal Anglicans like Dean Milman and A. P. Stanley rejected stasis and espoused the idea of progress. Indeed it has been suggested that the Victorian crisis of faith was the product of a renewed

struggle between salvationism and meliorism within the Established Church. Secondly Paley's accommodation of the concept of struggle in nature was unpopular, implying limitations either on God's benevolence or on his omnipotence. Paley himself recognised the problem and sought to explain struggle as arising from "animals...occupying situations upon the earth which do not belong to them, nor were ever intended for their habitation." The search for a more satisfactory or at least more comprehensive theodicy was a major preoccupation of natural theologians.²³

A central concept in natural theology was that proof of the existence of God lay in the evidence of design in nature. Every organism was seen to bear God's imprimatur, and "whereas formerly God was seldom in our thoughts, we can now scarcely look upon anything without perceiving its relation to him". Countless works of early-nineteenth century natural history testify to the pervasiveness of the view that all products of nature must exhibit utility: these include Darwin's early notebooks and his Journal of Researches. He himself wrote in The Descent of Man that "I was not able to annul the influence of my former belief, then almost universal, that each species had been purposely created; and this led to my tacit assumption that every detail of structure, excepting rudiments, was of some special, though unrecognised service." The argument from design depended on the work of natural historians to provide and interpret the

evidence, but was threatened by the wide range of anomalies known to natural historians which defied explanation. One solution was to relinquish faith in teleological contrivance and instead cast God in the role of law-maker; the existence of the laws governing nature, rather than particular adaptations, gave proof of design. Whilst retaining a major role for Providence, Paley had given limited sanction to the concept of God the law-maker when he represented the Deity as having delegated power to a benevolent but not omnipotent "Being" (subsequently associated with Nature), to contrive the world according to fixed rules and from appointed materials:

no arguments exclude the ministry of subordinate agents. If such there be, they act under a presiding, or controlling, will; because they act according to certain general restrictions, by certain common rules, and, as it should seem, upon a general plan: but still such agents, and different ranks, and classes, and degrees of them, may be employed.

Meanwhile a further advantage of the concept of a deity restrained by the operation of laws of his own making was recognised: "The three acutest men with whom I was ever acquainted," wrote Samuel Rogers, "Sir James Mackintosh, Malthus, and Bobus Smith [the brother of Sydney Smith], were all agreed that the attributes of the Deity must be in some respects limited, else there would be no sin and misery."⁷

The possibility that God worked through secondary laws, analogous to those governing the physical world, was widely canvassed by Owen in his 1838 Hunterian lectures, as well as

by Carpenter, Agassiz and more notoriously by Chambers in Vestiges of the Natural History of Creation in 1844. Carlyle, too, insisted that such a concept in no way detracted from God's glory. Darwin was as not as iconoclastic as has sometimes been supposed when in 1842 he cast God as law-maker and brought into service Paley's "Being". Moore has shown how post-Origin historiography deliberately exaggerated the polarisation of the "modern" pro-evolution group and the "retrogressive" theological apologists like Owen and Sedgwick. An extract from Owen's BAAS Presidential address of 1858 demonstrates the liberal mood of the pre-publication years:

The cause of natural as of moral truth is progressive: but it has pleased the Author of all truth to vary the fashion of the imparting of such parcels thereof as He has allotted from time to time, for the behoof and guidance of mankind...

Even if the origin of things were ultimately scientifically proven,

we should still retain as strongly the idea, which is the chief of the "mode" or "group of ideas" we call "creation": viz. that the process was ordained by and had originated from an all-wise and powerful First Cause of all things.

In the years leading up to the publication of the Origin there was a general perception of the need to explore new ideas in religion as in science: it was in the succeeding years that the middle ground was deserted and attitudes hardened.¹⁰

Just as the extent of God's personal involvement in the universe was being questioned, so too was the notion that man was himself the purpose of Creation. Natural theologians like John Fleming, whose Philosophy of Zoology figures in Darwin's Reading Notebook for December 1840, challenged the unique status of man and the concept of discontinuity between man and beast, suggesting instead a gradual progression in the faculty of reason from animal to man. The Rev William Kirby, whose 7th Bridgwater Treatise was read by Darwin on the Beagle and again on his return to England, attributed reason even to insects. Meanwhile Tennyson had scorned the arrogance of anthropocentricity in The Two Voices in 1832, while much of Wordsworth's writing was directed to exposing the weakness of "feeble-bodied man" and "self-flattering minds". And Carlyle's polemics, too, poured scorn on man's conceit.¹¹

In addition, the metaphor of the machine in Paley's writings drew many critics: the analogy of the watch and the watch-maker introduces Natural Theology and sets the tone for the rest of the work. The eye is compared to the telescope, "they are both instruments...", while "the disposition of...muscles is as strictly mechanical, as that of the wires and strings of a puppet." Paley depended on the power of the natural historian to explain contrivance, the very attempt at which was in Carlyle's eyes a contempt of God: "The man who cannot wonder, who does not habitually wonder (and worship) were he President of innumerable Royal

Societies,... is but a Pair of Spectacles behind which there is no Eye. Let those who have Eyes look through him, then he may be useful." The search for a more transcendentalist interpretation was not confined to men like Carlyle, but embraced those still within the mainstream of orthodox religion; Owen's work with the concept of the archetype can be seen as a reaction against Paleyan mechanistic theology.¹²

There was then no single hegemonic form of natural theology in the 1830s: Paley's works were one variant, the best-known and established, but by no means universally accepted. However, as a student at Cambridge, Darwin was directed to study Paley's theology and its impact upon him may be judged not merely by his own autobiographical testimony but by the influence it had in directing Darwin's future species research. Paley's Natural Theology adopted the method of induction by elimination, establishing one hypothesis by advancing and discounting all possible alternatives: the same method was pursued by Darwin from his earliest drafts of the theory. Darwin's imagery and vocabulary was extensively borrowed from Paley, as were the examples of mechanisms that needed explanation under his theory. The very fact that Paley was using the same materials to advance his argument from design, as Darwin wished to use to argue for natural selection - the development of the eye is an obvious example - reinforced the inevitability of interaction between his species speculation and his

metaphysical debates. Darwin was unable to proceed as many of his contemporaries in natural history were doing, that is rejecting the teleological approach to biological explanation: as far as his work on species was concerned it was not possible to make such a division. Paley further dictated that Darwin approach the question from the standpoint of adaptation: as he wrote to Hooker in January 1844, "I think I have found out (here's presumption!) the simple way by which species become exquisitely adapted to various ends."¹³⁵

2) The Years to 1837

When Darwin left England on the Beagle to be insulated for five years from intellectual debate, his world view was shaped by Paley, and there is no evidence that he was aware of the religious controversy proceeding among natural theologians, nor of its repercussions for naturalists. His isolation ensured that the glaring discrepancies between Paleyan theory and practice, revealed in the design anomalies presented by his specimens, in the ruthlessness of the Indian wars, in the mockery of anthropocentrism provided by the Fuegians, could not be moderated by a knowledge of contemporary theological revisionism, nor by an application of methodologies that sidestepped potential controversy. But while his lack of theological awareness deprived him of potential solutions, his personal interest in religious issues prevented him from ignoring the problems.

The Autobiography implies that he was uninterested in religion while liking "the thought of being a country clergyman". However there are indications that even before the voyage he was not as prosaic in his attitude to the church as this suggests. His close friend from Cambridge days, J. M. Herbert remembered a conversation he had had with Darwin in the summer of 1828:

...about going into Holy Orders; and I remember his asking me with reference to the question put by the Bishop in the Ordination service "Do you trust that you are inwardly moved by the Holy Spirit etc" whether I could answer in the affirmative; and on my saying "I could not ", he said "neither can I, and therefore I can not take orders."

Although this was a time when religious conviction was not deemed an essential qualification for the job, Herbert's reminiscence would seem to suggest that Darwin took a more serious view of his intended career. It may be significant too that three of his closest acquaintances in Cambridge, Henslow, Sedgwick and Fox were all men whose lives, whatever their interest in natural history, were dedicated first and foremost to the church.¹⁴

The letters that Darwin wrote from the Beagle to his cousin W. D. Fox, and to Herbert's cousin, Charles Whitley, both clergymen, confirm the impression that while he continued to hanker after the lifestyle of the cleric he became ever more doubtful of his ability to perform the job without the support of orthodox belief. These letters betray

a sense of nostalgia, indicating that the clerical career may have been consciously relinquished, rather than dying "a natural death" on the Beagle as Darwin later maintained. In November 1832 he wrote to Fox "I hope my wanderings will not unfit me for a quiet life, and that in some future day, I may be fortunate enough to be qualified to become, like you a country Clergyman." By the following May he was obviously more doubtful, "I often conjecture, what will become of me; my wishes certainly would make me a country clergyman." But what he wished for was the curacy and the place in society that the incumbency of a parish bestowed on the incumbent and his family, rather than the church with all its doctrines; increasingly he seems to have decided that he could not have the one without the other. But it was with reluctance that he forsook his intended career with its promise of security and of a settled family life. He wrote to Whitley in July 1834 of "former visions, of glimpses into futurity, where I fancied I saw, retirement, green cottages and white petticoats.- What will become of me hereafter, I know not; I feel, like a ruined man, who does not see or care how to extricate himself." A year later the parsonage had become even more remote: "Your situation is above envy" he wrote to Fox in August 1835 "I do not venture even to frame such happy visions.- To a person fit to take the office, the life of a Clergyman is a type of all that is respectable and happy."¹³

The anguish of his renunciation can only have been

increased by the knowledge of the distress his decision would cause to the sisters who had raised him. All three held conventional religious opinions and strongly promoted the idea of Charles becoming a clergyman. Between July and September 1832 Catherine, Susan and Caroline each wrote to him urging that this goal should remain in the forefront of his thinking; a year later Susan reported a visit to Charlotte Langton, whose husband had a living at Onibury, "Mr Langton seems most extremely happy and finds himself excellent friends with his Parishioners. I quite long for you to be settled in just the same kind of manner my dear Charley..."¹⁴

His sisters' preference for the parsonage may have had more to do with a natural desire to see their brother settled than with religious conviction, but members of the Wedgwood family took a more earnest view of faith. His cousin, "the Incomparable Charlotte Wedgwood", writing to congratulate him on his appointment to the Beagle expressed her fears that the voyage would weaken his intent to become a clergyman: "I do confess that that third year makes me tremble much more than I did before for the country parish and parsonage house where I should be very sorry not to see you established - I think it is the happiest kind of life and one which would almost oblige any one to be good, and something to oblige one to be good is what one feels the want of every day of one's life."

The following January in a letter informing him of her engagement to Charles Langton she wrote,

I feel more anxious that you should finish all your wanderings by settling down as a clergyman but it must be as a really good active religious clergyman, (you know you gave me leave to preach) in that only can the happiness consist and if I did not think Mr Langton would be all that, I think I would rather he were any thing but a clergyman.

Nine years later, unable to conform to this precept, Charles Langton resigned his parish.¹⁷

Nor was Charlotte the only member of the Wedgwood family to insist that matters of religious faith assume a central importance in life. The children had been brought up in the Established Church, but rebelled against the laxity of their parents' beliefs. Frank reverted to the Unitarianism of his grandfather. Hensleigh too rejected the doctrines of the Church of England in favour of a more spiritual, dualistic Unitarianism. His wife Fanny meanwhile, directed by her half-sister Mary Rich who was involved in the Clapham Sect and with Edward Irving's Holy Catholic Apostolic Church, came under the influence of Evangelicalism. The maternal aunts, Jessie Sismondi and Fanny Allen also insisted on the centrality of religious experience; and for their favourite niece Emma, her faith tested by the sudden death of her beloved sister Fanny in 1832, the question of religious belief was immediate and emotional and deeply important. Thus, although his father was careless of religious belief,

and his brother Erasmus was a freethinker, Charles had been exposed among his family as well as with his Cambridge peers, to considerable religious fervour, and questions of belief were never a matter of indifference to him. Such a background ensured that issues that challenged Darwin's faith would not be evaded, but would be recognised as requiring analysis and reconciliation; his experiences on the Beagle prompted many such issues.¹⁸

As the voyage drew to its conclusion, Darwin's diary referred, after a silence of two years, to conventional religious observance. Such doubts as had arisen were not sufficient to cause him to change his practice. Nevertheless his summing-up of his experiences on the voyage is revealing: in conventional phrases he reaffirmed his faith, and the dualism that he was to reject within the next two years. And yet God's immediacy in the ordering of things had weakened, supplanted by the romantic identification of God with Nature:

Amongst the scenes which are deeply impressed on my mind, none exceed in sublimity the primeval forests, undefaced by the hand of man, whether those of Brazil, where the powers of life are predominant, or those of Tierra del Fuego, where death and decay prevail. Both are temples filled with the varied productions of the God of Nature. No one can stand unmoved in these solitudes, without feeling that there is more in man than the mere breath of his body.¹⁹

3) Darwin and Religion: 1837-1842

Whatever the precise nature of Darwin's views in the

autumn of 1836 when he returned to England, the intention of becoming a clergyman would seem to have been abandoned. Although he never addressed the matter directly, his letters home increasingly spoke of the hard geological work that lay ahead of him in processing the discoveries he had made. He spent some months with Henslow, sorting his collections in preparation for their allocation to experts in the respective fields of natural history. When he settled in London in March 1837, Darwin could involve himself in contemporary debates on the nature of religious faith unimpeded by professional loyalties to the church. It was in this environment that he proceeded to explore the implications of his Beagle experiences in the company of men and women whose main interest was the elucidation of philosophical issues. The voyage had affected Darwin's faith in three key areas: the place of man in the universe, the argument from design and the absolute nature of religious truth.²⁰

The most traumatic experience of the Beagle voyage had been the meeting with the Fuegians. Nothing in Darwin's sheltered experience had prepared him for the sight of man in his "natural state": in letters to his family, to Henslow and in entries in his diary he described again and again the shock of seeing man so degenerate. Writing his Autobiography more than forty years later that impression was still with him: "The sight of a naked savage in his native land is an

event which can never be forgotten." On the first visit of HMS Beagle to Tierra del Fuego, in January 1833, Darwin noted in his Diary,

How very little are the habits of such a being superior to those of an animal. By day prowling along the coast and catching without art his prey, and by night sleeping on the bare ground.

By the time of his second visit a year later he still had not come to terms with the glaring disparity between the reality of the Fuegian and the theological doctrine of man as the pinnacle of creation. Describing them as little differentiated from animals he sought some "natural" explanation for their state:

Their red skins, filthy and greasy, their hair entangled, their voices discordant, their gesticulation violent and without any dignity. Viewing such men, one can hardly make oneself believe that they are fellow creatures placed in the same world....Their skill like the instinct of animals, is not improved by experience....There can be no reason for supposing the race of Fuegians are decreasing, we may therefore be sure that he enjoys a sufficient share of happiness (whatever its kind may be) to render life worth having. Nature, by making habit omnipotent, has fitted the Fuegian to the climate and productions of his country.

The savage remained at the mercy of the physical forces of the world:

man has no claim to authority here - how insignificant does Wigwam look. The Fuegian does not look like the Lord of all he surveys... The inaccessible mountains and wider power of nature despise control seem to say here we are the sovereign.²¹

The disgust inspired in Darwin by this meeting with the Fuegians undermined doctrines that sought to make man the

final object of Creation. In the transmutation notebooks he condemned such doctrines as the products of man's arrogance, and the Fuegian episode was the example he used:

Let man visit Ourang-outang in domestication, hear expressive whine, see its intelligence when spoken,...(let him look at savage, roasting his parent, naked artless, not improving, yet improvable) and then let him dare to boast of his proud preeminence.

Once regarded in this light, anthropocentric philosophies seemed absurd:

Mayo (Philosophy of Living) quotes Whewell as profound because he says length of days adapted to duration of sleep in man!! whole universe so adapted!!!and not man to Planets. - instance of arrogance!!

Darwin recalled the arguments of the slave-owners, to the effect that the negro belonged to a separate inferior species; these became cynical attempts to preserve man's godlike origin in the face of the debasement of the slave. Darwin's reaction against these and other instances of "cosmic arrogance" radically affected Darwin's religious and evolutionary views. Man's relegation from a unique, semi-divine position to a place in the natural continuum implied firstly that the fact of religious belief could no longer be considered proof of its validity (since it might itself be capable of a natural explanation), and secondly that man himself could be used as a research tool in the quest for laws that could govern all of nature. Any theory must henceforth recognise that man was, like the rest of creation, subject to the ordinary laws of organic nature.²²

Meanwhile, Darwin's acceptance of Paleyan mechanistic theology had been shaken by the intensity of the emotional experiences undergone in the Tropics. In January 1832 he wrote in his diary "It has been for me a glorious day, like giving a blind man eyes, he is overwhelmed with what he sees and cannot justly comprehend it. Such are my feelings, and such may they remain." The following month he spoke of "transports of pleasure" and "raptures" to add to "the former raptures". In Santa Fe he experienced again the sensation of awe and wonder: "Amongst the fallen masses of rock, vegetation was very luxuriant; there were many beautiful flowers, around which humming birds were hovering. I could almost fancy that I was transported to that earthly paradise, Brazil."²³

Darwin's autobiographical boast of having read and reread Wordsworth's Excursion following his return to England, would seem to lend support to the view that his Beagle experiences had impressed him with the possibility of a grander vision of an immanent Deity far removed from Paley's watch-maker. The argument from design had further suffered under Darwin's personal encounters with some of the anomalies that troubled natural theologians and natural historians alike. Why was it "that so much beauty should be apparently created for such little purpose?" What explanation could there be for the Turkey Buzzard, seen in Tres Montes, "this disgusting bird, with its bald scarlet head, formed to

wallow in putridity"?²⁴

The final legacy of the Beagle voyage was an understanding of cultural relativity, with its implications for faith in absolute truth. Witnessing the beliefs of primitive peoples, beliefs which appeared ridiculous to the European, Darwin had to acknowledge the possibility that the Europeans' beliefs might appear equally naive to a more sophisticated observer.

A first priority for Darwin on his return was to work out the consequences of his denial that man occupied a unique place in creation. If man was but a part of a continuum, different in degree but not in kind from the rest of the natural world, where did this leave concepts of the soul and of immortality? Initially Darwin saw no necessary incompatibility: in the margin of a passage declaring the theory of unity of descent he wrote, "The soul by consent of all is superadded, animals not got it, not look forward". These notes were made in late December 1837 or early January 1838; in the six months that elapsed before Darwin began his first metaphysical notebook Hensleigh and his family were absent from London, staying at Maer until the problems associated with Hensleigh's resignation were overcome. But he was installed in London again in the summer of 1838, and it would seem to have been principally with Hensleigh that Darwin worked out the extent of his materialism. Darwin was

well aware of the materialist tendencies in his thinking: if the religious sense had evolved, rather than being implanted in man by the Creator, the implication was that "love of the deity effect of organization, oh you materialist!". Passages written subsequently make it clear that this was not the conclusion of Darwin's thinking, but an expression of one of a range of possibilities: shortly after the Wedgwoods' return to London, Darwin noted that "Hensleigh says the love of the deity and thought of him/ or eternity/ only difference between the mind of man and animals.- yet how faint in a Fuegian or Australian! Why not gradation. - no greater difficulty for Deity to choose when perfect enough for future state, than when good enough for Heaven or bad enough for Hell."²⁵

It was at this point that Darwin began his metaphysical notebooks, in an effort to reach some clearer understanding of his own position. Another set of notes, written in the same period, he subsequently collected together under the heading of "Old and Useless Notes about the moral sense and some metaphysical points". Amongst these were some written by Hensleigh and annotated by Darwin. Hensleigh argued strongly for the dualist position, refuting the suggestion that the relationship of gravity and matter might serve as an analogy for the relationship between thought and body. He concluded "The reason why thought etc. should imply the existence of something in addition to matter is because our knowledge of

matter is quite insufficient to account for the phenomena of thought. The objects of thought have no reference to place." Darwin dismissed the argument, "We see a particle move one to another, and (or conceive it) that is all we know of attraction." In the M notebook he continued to ascribe thought as arising from organisation.²⁶

Nevertheless it remains inappropriate to speak of Darwin at this stage as adhering to a reductionist materialism; at least two alternative explanations might be advanced. The first, a variant of natural theology, proposed that man's thought is the product of an organisation invested in him by the system of laws to which God consigned the operation of the universe: Darwin employed this argument when in the autumn of 1837 he noted "Astronomers might formerly have said that God ordered each planet to move in its particular destiny. - In same manner God orders each animal created with certain form in certain country, but how much more simple, and sublime power let attraction act according to certain law such are inevitable consequences let animal be created, then by the fixed laws of generation, such will be their successors." Chambers too was to exploit this method of reconciling theism and evolution in his Vestiges of the Natural History of Creation.²⁷

But there was also available to Darwin a fundamentally different form of materialism, that proposed by Joseph

Priestley, who confessed to a materialism compatible with theism consisting not in the debasement of the spirit but in the spiritual elevation of matter. The consonance of such a view with Darwin's experience of the sublime on the Beagle voyage, an experience which itself harmonised with the romantic and Unitarian tradition of the Wedgwood family, makes it very attractive. Darwin's reading notebooks first record Priestley's name in late 1840 but it would be mistaken to suppose this was his first acquaintance with Priestleyan metaphysics. Priestley was, in Harriet Martineau's words, "the great apostle of Unitarianism" and a co-participant with Darwin's two grandfathers, Josiah Wedgwood I and Dr Erasmus Darwin, in the Lunar Society of Birmingham. Harriet had studied Priestley's ideas in depth firstly under the tutorship of Lant Carpenter during her stay in Bristol as a teenager and then under her own auspices once returned to Norwich. She adopted his ideas and remained a devoted disciple until her final break with Unitarianism and her adoption of philosophic atheism in the late 1840's. Darwin could draw on Harriet Martineau's knowledge of Priestley to secure intellectual authority for the spiritualisation of Nature and so escape the pejorative implications of materialism.²⁸

It is useful to discuss in this context the role of Wordsworth which has been emphasised both by Edward Manier and Gillian Beer. Although there is little evidence to

support his having exercised a direct influence upon Darwin, the compatibility of Wordsworth's "religion of nature" with Priestleyan Unitarianism (a compatibility recognised by Coleridge) makes it difficult to believe that he did not draw on Wordsworth as well as on Priestley when trying to make sense of his Beagle experiences. Darwin had links with Wordsworth provided by family tradition and by his own reading and, once again, through the companionship of Harriet Martineau whose Monthly Repository articles of the early 1830s, collected and republished as Miscellanies in 1836 were redolent with Wordsworthian imagery. Darwin's sense of poetry in nature is evident in the conclusion of the Sketch of 1842:

There is a simple grandeur in the view of life with its powers of growth, assimilation and reproduction, being originally breathed into matter under one or a few forms, and that whilst this our planet has gone circling on according to fixed laws, and land and water, in a cycle of change, have gone on replacing each other, that from so simple an origin, through the process of gradual selection of infinitesimal changes, endless forms most beautiful and most wonderful have been evolved.

When he came to write his Autobiography, Darwin denied his former belief that the sensations evoked in him by the grandeur of the Brazilian forest could be taken as proof of the existence of God. Nevertheless it seems likely that the religion of nature provided a useful bridge on the road from Paleyan natural theology to evolutionary deism.²⁹

Materialism, in its most expansive sense of the rejection of dualism, was also important for Darwin

emotionally, for it enabled him to rationalise his very different experiences in Tierra del Fuego. Intellectually it allowed him to look at the entire organic world as subject to the same laws and processes. Man's innate moral sense, for example, to which was attributable the successful ordering of society was conventionally seen as divinely implanted. Darwin with his new freedom of thought could look on the moral sense as a variant of the social instinct common to all animals living in social groupings. Religious belief arose as a result of man's need to find an explanation for the inexplicable:

So ready is change, from our idea of causation, to give a cause (and no one being apparent, one fixes on imaginary beings, many vicarious, like ourselves) that savages (Mem York Minster) consider the thunder and lightning the direct will of the God (and hence arises the *theological* age of science in every nation according to M. le Comte). Those savages who thus argue, make the same mistake, more apparent however to us, as does that philosopher who says the innate knowledge of creator has been implanted in us (?individually or in race?) by a separate act of God...³⁰

Here too Darwin's personal experience was complemented by other influences: by his reading of Brewster's review of Comte and by his companionship with Harriet Martineau and Carlyle. Martineau's statement of cultural relativism in How To Observe was extensively noted by Darwin but she herself had not finished with the subject. She continued to refine her developmental view of religion which found its mature expression in Eastern Life in 1848. Meanwhile Carlyle too urged that ideas must be located in their temporal context

and had no enduring identity independent of that context. In Sartor Resartus he discussed the eternal debate on the origin of evil:

In every new era, too, such Solution comes out in different terms; and ever the Solution of the last era has become obsolete, and is found unserviceable. For it is man's nature to change his Dialect from century to century; he cannot help it though he would.

Carlyle depicted different religions as religious symbols of which the most divine yet reached was Christianity:

But, on the whole, as Time adds much to the sacredness of Symbols, so likewise in his progress he at length defaces, or even desecrates them; and Symbols, like all terrestrial Garments, wax old....a day comes when the Runic Thor, with his Eddas, must withdraw into dimness; and many an African Mumbo-Jumbo and Indian Pawaw be utterly abolished. For all things, even Celestial Luminaries, much more atmospheric meteors, have their rise their culmination, their decline.

From such a relativist standpoint, Darwin could speculate on the source of the conventional association between God and morality: "May not the idea of God arise from our confused idea of "ought", joined with necessary notion of "causation", in reference to this "ought,"...." It is man's desire to find a cause that leads him to argue from the existence of the moral sense to the existence of God. By treating man as a "social animal", by undermining the argument that the moral sense was divinely implanted, Darwin could reject the proof of God that depended on the existence of the moral sense.³¹

Necessitarianism was another concept with which Harriet could help Darwin. It was not adopted by the majority of Unitarians and James Martineau had repudiated it in the early

1830s. However his sister, searching at the age of twenty for a solution to the paradox of a benevolent Providence and the existence of evil, became a devoted adherent. Darwin, adopting a necessitarian approach in his notebooks, recognised the threat it posed to religious belief: concluding a passage on the delusion of free will he wrote "The above views would make a man a predestinarian of a new kind, because he would tend to be an atheist." But for nearly two decades Harriet managed to reconcile necessitarianism with a profound belief in God and it was not until her protracted illness of 1839-45 that her gradual transition to atheism began.³²

Throughout her London years Harriet accepted the argument for the existence of God from the existence of a religious instinct in man. She clung to deism for fear of the effects on morality of a Godless world; like Darwin she was finally reassured by the belief that conscience did not depend on religion. Her infidelity involved no sudden conversion and she resolutely refused to address the question of a First Cause: the "philosophical atheism" she ultimately embraced was not the aggressive secularism of a Charles Bradlaugh. It was indeed scarcely removed from deism, as the following extract from her Autobiography reveals:

Every child, and every childish tribe of people, transfers its own consciousness, by a supposition so necessary as to be an instinct, to all external objects, so as to conclude them all to be alive like itself; and passes through this stage to a more reasonable view: and, in like manner, more advanced nations and

individuals suppose a whole pantheon of Gods first,- and then a trinity,- and then a single deity;- all the divine beings being exaggerated men, regarding the universe from the human point of view, and under the influences of human notions and affections. In proportion as this stage is passed through, the conceptions of deity and divine government become abstract and indefinite, till the indistinguishable line is reached which is supposed, and not seen to separate, the highest order of Christian philosopher from the philosophical atheist."³³

This passage illustrates one way in which religious beliefs could alter without sudden or traumatic transitions. With Harriet Martineau it was a gradual process; Darwin, too, claimed that disbelief "crept over me at a very slow rate". His rejection of the Old Testament, of miracles, and of revelation was shared by friends like Harriet Martineau and Thomas Carlyle, and parts of his doctrinal heterodoxy were viewed sympathetically by acquaintances like Dean Milman, a friend and neighbour of Harriet's. Milman was a liberal Anglican, well versed in German biblical criticism, whose History of Christianity was read by Darwin in 1840. He too stressed the relativity of religious truth: in order to win popular faith it must present itself in a guise acceptable to the population. God's demand of Abraham to sacrifice Isaac must be understood by reference to the high value placed by that society on human sacrifice. For Darwin as for Carlyle, cultural relativity undermined the credibility of Revelation and as such his views differed fundamentally from those of liberal Anglicans like Dean Milman. Scriptural accounts for Darwin were unreliable not in their detail, but in their

substance. Revelation was not the consequence of God's accommodation of Truth to his audience, it was a man-made artefact. Nevertheless Milman is a reminder of the wide spectrum of religious views under discussion in Darwin's social circle and the degree of toleration of heterodoxy. The existence of intermediate forms of many kinds between strict orthodoxy and unbelief lends support to Martineau's own depiction of the insensible gradation between philosophical Christianity and philosophic atheism, and to the view that these two concepts had more in common than was to be found between philosophic atheism and the popular atheism associated with radical politics.³⁴

In the late 1830s neither Darwin nor Martineau could accept a Godless universe. But if cultural relativity undermined the authenticity of revelation, what was left to divide the deist from the unbeliever? Carlyle suggested that faith in God was non-doctrinal, impregnable by analysis, existing separately from matters susceptible to understanding. It was not necessary to reconcile faith and reason for they inhabited different realms. He respected Christianity as the "divinest Symbol" yet reached by "human Thought", but rejected the doctrines of the Church of England, and was scornful of F. D. Maurice's attempt to reconcile the Thirty Nine Articles with freedom of conscience. As for immortality, the most he would offer was a quote from Goethe, "We bid you to hope." His friend Erasmus

Darwin could be forgiven some confusion: "What the deuce is Carlyle's religion? Or has he any?", he is recalled to have said. And yet faith was central to Carlyle's life: "with it, Martyrs, otherwise weak, can cheerfully endure the shame and the cross; and, without it, worldlings puke-up their sick existence, by suicide, in the midst of luxury".

Faith, expressed in dedication to work and to constant striving for an unreachable goal, was what divided man from brute, and was what enabled society to survive: religion was the "Life-essence of Society". Carlyle was offering the mantle of religiosity without imposing any conditions in the sense of limitations on freedom of thought. It was in this sense that Frank M. Turner affirmed that "Carlyle's idealist concepts and moral doctrines eased the transition from a religious apprehension of the universe to a scientific and secular one."³⁵

A willingness to avoid doctrinal definition was shared by Carlyle and by liberal Anglicans like Milman. Unitarianism, too, represented in Darwin's circle by Harriet Martineau, Charles Lyell and from the autumn of 1838 by Emma, contributed to an emphasis on personal conscience above externally imposed dogma. Unitarianism was a divided body: one faction placed its faith in personal intuition, a second in the Scriptures, and a third followed the teachings of Priestley. Increasingly the first faction gained dominance

under the leadership of James Martineau; although it was not until 1845 that he publicly rejected Scriptural miracles, this represented an admission of doubts that had been accumulating over many years rather than a new departure . Eternal damnation and original sin had long since been rejected as incompatible with the Unitarian faith in the "Fatherhood of God". Unitarianism in practice offered great licence to its followers in matters of belief: Dr Erasmus Darwin had called it " a featherbed to catch a falling Christian", a sentiment subsequently echoed by Thomas Arnold:

The Unitarian body in England consists of elements the most dissimilar; including many who merely call themselves Unitarians, because the name of unbeliever is not yet thought creditable, and some also who are disgusted with their unchristian associates, but cannot join a church which retains the Athanasian creed."

To embrace a self-defined and personal form of Christianity in the mid-nineteenth century did not necessarily invite condemnation from the orthodox. Within Darwin's own circle there was toleration of and a strong commitment to the free discussion of a wide spectrum of heterodox Christian belief.³⁶

4) Darwin and Religion: A summary

By looking at Darwin's religious views against the background of his family and friends, several points emerge: firstly Darwin had always enjoyed the company of people for whom matters of Christian faith were a primary concern: Charlotte and Hensleigh Wedgwood at Maer, Henslow and W. D. Fox at Cambridge, Erasmus's friends in London. Secondly he

was not under pressure to make his science conform to orthodoxy. Unitarian tradition supported a spirit of free enquiry: "the mistakes of scientific men have never injured Christianity," wrote Coleridge, "while every new truth discovered by them has either added to its evidence or prepared the mind for its reception". Newer influences, like those of Comte or Carlyle, both from different standpoints insisting that faith and reason inhabited different realms, were easily accommodated to this tradition. Thirdly, Darwin's emotional response to his experiences on the Beagle, the relegation of man from unique status to a place on a continuum with the rest of creation, met with intellectual support from Priestleyan materialism as expounded by Harriet Martineau, and with no adequate intellectual rebuttal: Hensleigh's defence of dualism was unconvincing and Darwin was free to use man as research material; the laws of human society could be translated to apply to the whole of the natural world. The stage was set for his Malthusian insight.³⁷

Finally, a study of some of Darwin's contemporaries has shown the possibility in the late 1830s of rejecting fundamental religious doctrines whilst still laying claim to a Christian faith. If Darwin in his London years did "tend to be an atheist" from time to time, it was in the sense ascribed by Harriet Martineau, envisioning a world *without* God, rather than a denial *of* God in the manner of the militant secularists.³⁸

It has been argued that Darwin had by 1842 abandoned religious belief, and that deistic references in the Sketch were introduced in acknowledgement of the future need to assuage Emma's anxiety and public opinion. These arguments do not carry conviction. Undoubtedly in the preceding five years many of the difficulties that had presented themselves had been resolved and the transmutation theory had played an important part in their resolution: the disgust at the lowly status of aboriginal man, the confusion arising from the existence of pain and suffering, and the anomalies that challenged the argument from design, could all be palliated by a naturalistic explanation of the development of life on earth; a belief in God from the existence of religious instinct was likewise negated by an appreciation of man's need to understand causation. In the ensuing years before publication of the Origin, the bitter personal blow of the death of his favourite daughter Annie in 1851, and the continuing intellectual attack on orthodoxy (Darwin read Newman's Phases of Faith also in 1851) reinforced his doubts about Christianity. Yet creationist language was allowed to stand in the Origin, scarcely changed from the drafts of 1842 and 1844. Darwin was not hypocritical in his use of language: he clung to some residuary faith because of the strength of his emotional resistance to seeing the world as the product of chance. He explained his position in a letter to a Dutch student in 1873:

the impossibility of conceiving that this grand and wondrous universe, with our conscious selves, arose thro' chance, seems to me the chief argument for the existence of God; but whether this is an argument of real value, I have never been able to decide. I am aware that if we admit a first cause, the mind still craves to know whence it came and how it arose. Nor can I overlook the difficulty from the immense amount of suffering thro' the world. I am also induced to defer to a certain extent to the judgement of the many able men who have believed in God; but here again I see how poor an argument this is. The safest conclusion seems to me that the whole subject is beyond the scope of man's intellect; but man can do his duty."

This letter was characteristic of his religious pronouncements, although at times more weight was given to the First Cause, at others more to the untrustworthiness of man's intuition.³⁹

During his time in London Darwin had moved from a position of relative orthodoxy to something fluctuating between "evolutionary deism" in Greene's term and "philosophic atheism" in Martineau's, and uncertainty continued to characterise his position thereafter. It was the attempt to resolve that uncertainty, rather than the precise nature of his religious views at any given time, that was of real importance in his species speculation. His friends encouraged his metaphysical questioning and provided a wide range of attitudes to God and man. German transcendentalism was available, through the mediation of Carlyle and Erasmuss, as well as from Whewell's History of the Inductive Sciences, read by Darwin in the autumn of 1838. A species had an existence of its own: it was more than a collection of

individuals, and individuals derived their importance from their role in perpetuating the species and accommodating it to change. The individualism of classical political economy was presented by Harriet Martineau, supplementing Darwin's own understanding of Adam Smith as learned from his reading of Dugald Stewart and others. As the interests of the individual would automatically harmonise with the interests of society, so would they with the interests of the species. With his eclectic approach Darwin could take ideas from seemingly contradictory sources, and blend them into a system that he could advance, without hypocrisy, as offering a more ennobling vision of the Creator than that of traditional natural theology:

It accords with what we know of the law impressed on matter by the Creator, that the creation and extinction of forms, like the birth and death of individuals should be the effect of secondary means. It is derogatory that the creator of countless systems of worlds should have created each of the myriads of creeping parasites and (slimy) worms which have swarmed each day of life on land and water on (this) one globe.⁴⁰

Although Darwin never reached a position of certainty in questions of faith, it is possible to attempt an assessment of the influence of his religious quest upon the development of his evolutionary theory. Darwin's religious doubts were important because they framed the questions that his theory had to answer; just as his admiration of Paley lent a vocabulary and imagery, so the inability of Paley's arguments to meet the challenges posed by Darwin gave a conceptual

structure within which to work. Paley's insistence on perfect adaptation was negated by the evidence of the Beagle collections, his faith in benign harmony was challenged by General Rosas's genocide, his commitment to the unique status of man was derisory in the face of the Fuegian savage or the demoralised slave. Because Darwin's formal theological training had centred on the works of Paley, he worked out his alternative within the parameters set by Paley. But in constructing his alternative he employed the combined wisdom of his London friends. They shared his spirit of enquiry; they rejected the static universe of Paley and the concept of an intervening Providence; they searched for laws that governed the universe and for a temporal meliorism through the education of people in the ways of those laws. Their lack of consensus on some matters, combined with their toleration of different opinions, merely served to crystallise the arguments in Darwin's mind and to help him towards their resolution.

His London companions showed Darwin too that the challenging of outmoded doctrines was not tantamount to infidelity: the relativism of Carlyle and Martineau and the rejection of doctrine that was shared in part at least by Hensleigh, was combined with a strong and enduring faith. Furthermore, his introduction during his London years to the debates within natural theology already referred to showed him that even his renunciation of the unique status of man,

so important heuristically because it made Malthus available to him, was not so radical as to put him outside the limits of respectable heterodoxy. It would be wrong to exaggerate the protection afforded to Darwin by his identity with the intellectual avant garde. Old beliefs were well defended by people within his circle, like Emma and Sedgwick, as well as without. Nevertheless whilst living in London and working out his theories, Darwin could take comfort from his involvement in a collective enterprise with like-minded people. That enterprise was essentially the redefining of the relationship between the new intellectuals and constituted authority. Representative of a well-educated middle class, they looked for political liberty through parliamentary reform, social liberty through doctrines of economic individualism, and religious liberty through a denial of church dogma and of revelation. Darwin's inner circle of friends was intimately involved in this process; an extended network including their associates would draw in many of those most actively engaged, men like Dean Milman, Francis Newman and F. D. Maurice.

In 1842, Darwin left this world for Down. His religious problems were not over, but the debates in which he had been involved had allowed him to see old problems with new eyes, to build a theory that reflected the rejection of traditional authority. In leaving London he left the protection of other intellectuals; being no iconoclast, once settled in Down he adopted as far as possible the "White of Selborne" life that

had always appealed to him. He continued to read widely in theology and philosophy, and when health allowed attended the Philosophical Club of the Royal Society in the 1850s. But he took no further active part in the continuing debates about religion and those questions which he had not resolved by the time of his departure from London, particularly regarding the First Cause argument and the problem of chance, remained unresolved. But his very uncertainty ultimately advanced the cause of his theory, for the ambiguities in his own position found expression in the Origin and thereby made his theories more widely acceptable than they could otherwise have been. Like the Bible, the Origin could be interpreted in a way compatible with a broad spectrum of attitudes to man and God: it could mean, to a very great extent, what its reader wished it to mean.

NOTES TO CHAPTER 5

- 1 Garfinkle, 1955, pp. 384-5; Burckhardt, 1977, pp. 194-5; Desmond, 1985.
- 2 Autobiography, p. 55; Emma Wedgwood to Darwin, 23 November 1838 and 23 January 1839 and February 1839, Correspondence, 2, 123, 169, 172; Brooke, 1985, attributes a crucial role to Emma in forcing Darwin to recognise the extent of his unbelief: given the interests of other members of his circle, I believe he could not have avoided such self-awareness, but Emma must have added an emotional pressure to the primarily intellectual pressures of group debate.
- 3 Mandelbaum, 1958.
- 4 Moore, 1979, pp. 307-311; Ospovat, 1981, p. 72; Greene, 1975, p. 246; Manier, 1978, *passim*, p. 186; Moore, 1979, pp. 326-340; Brooke, 1985.
- 5 Moore, 1982a, Table 2. The House of Lords petition, Keele, W/M 1371, is undated, but the address given by Erasmus Darwin was that of his home in the 1850s. Tennyson was, like Erasmus, briefly a member of the Apostles: in a debate, "Is an intelligible First Cause deducible from the phenomena of the universe?", he voted "No" (Levy, 1979, p. 73).
- 6 On the travails of natural theology see Brooke, 1977, Richards, 1981.
- 7 Paley, 1802, pp. 383, 404 and quoted by Flew, 1959, p.

40. Brooke, 1979, explains the deference to natural theology as arising from its mediatorial function: the use of the language of natural theology allayed popular fears that science might undermine religion, and so bought geologists their freedom.
- 8 Murphy, 1955, pp. 800-801; Paley quoted by Gale, 1972, p. 329.
- 9 Paley, 1802, p. 576; Descent, p. 92; Paley, 1802, pp. 44, 273, 487; Samuel Rogers quoted in James, 1979, p. 118.
- 10 Ospovat, 1981, pp. 21, 31; Carlyle, Sartor Resartus, p. 161. On Paley's "Being", see Moore, 1979, pp. 322-326. Moore, 1979, Part I; Basalla et al, eds., 1970, pp. 312, 327.
- 11 Richards, 1981. Wordsworth quoted by Manier, 1978, pp. 91, 93; two of the many examples of Carlyle's condemnation of man's arrogance may be found in Sartor Resartus, p. 157, and Past and Present, p. 75.
- 12 Paley, 1802, pp. 20, 132.
- 13 Autobiography, pp. 32-3; the same method of induction by elimination was used by Sumner in the Evidences of Christianity, annotated by Darwin (DAR 91 and Moore, 1985, p. 478 n3) :the dangers inherent in the method were illustrated by the fate of Darwin's Glen Roy work. Darwin to Hooker, 11 January 1844, LLD, II, 23.
- 14 Autobiography, p. 31; J. M. Herbert to Francis Darwin, 2 June 1882, Correspondence, 1, 104 n3; on the early-

- nineteenth century clergy see Moore, 1985, p. 442.
- 15 Autobiography, p. 31; Darwin to W. D. Fox, November 1832 and 23 May 1833, Correspondence, 1, 285-6, 315-6; Darwin to Whitley, 23 July 1834 and to W. D. Fox, August 1835, Correspondence, 1, 396-7, 460.
- 16 Catherine to Darwin, 25 July 1832, Susan to Darwin, 15 August 1832, Caroline to Darwin, 12 September 1832, Susan to Darwin, 15 September 1833, Correspondence, 1, 254, 256, 271, 337. Moore, 1985, pp. 447-9, argues that lack of marriage prospects deterred Darwin from pursuing the clerical career. However the rapidity with which he executed his intention to marry, once he had made up his mind to do so, and the nurturing of potential marriage candidates by his sisters, would indicate that if Darwin feared bachelorhood, his fears were unfounded.
- 17 Charlotte Wedgwood was so referred to by Darwin in a letter to W. D. Fox, 30 June 1832, Correspondence, 1, 245; Charlotte Wedgwood to Darwin, 22 September 1831 and 12 January 1832, Correspondence, 1, 165, 197. There is no record of any reply to these letters. Charlotte had at one time been the object of Darwin's attentions (See, for example, Correspondence, 1, 189-190).
- 18 Brown, 1986, p. 5 suggests that if any viewpoint was underrepresented in Darwin's circle, it was that of the Established Church.
- 19 Diary entries, 24 December 1835 and 3 April 1836, and p. 427, Barlow, ed., 1933: this summary was reproduced

almost verbatim in the Journal of Researches; Brown, 1986, pp. 9-10, denies that any significance attaches to the absence of reference to religion, and believes no substantial shift in his position occurred during the voyage.

- 20 Darwin to Caroline, 29 April 1836, Correspondence, 1, 495.
- 21 Autobiography, p. 46; diary entry, 25 February 1834, Barlow, ed., 1933, pp. 212-3; notebook entry, 8 June 1834, Barlow, ed., 1946, p. 223. Other examples may be found in Darwin's diary entries for 18 December 1832, 16 December 1833, and in Darwin's letters to Caroline, 30 March-12 April 1833 and to Henslow, 11 April 1833, Correspondence I 302-5, 306-8.
- 22 C 79, D 49; and see B 231 and C 154, but cf. D 39; "cosmic arrogance" is a term coined by Gould, 1978, p. 14.
- 23 Diary entries, 16 January 1832, 29 February 1832, 1 March 1832, Barlow, ed., 1933; although the major impact was undoubtedly in the early months, Darwin continued to exhibit a strong emotional response to landscape, see, for example, Darwin to Henslow, 18 April 1835, Correspondence, 1, 440.
- 24 Autobiography, p. 49; diary entries, 11 January 1832, 4 January 1835, and see also 18 January 1836, Barlow, ed., 1933. Manier, 1978, pp. 89-96 saw Wordsworth as the source of Darwin's pantheistic ideas: but Darwin may have turned to Wordsworth seeking an

- understanding of his earlier experiences of the sublime.
- 25 B 232, C 166, C 244; Gruber, 1981, p. 41, cites C 166 as evidence of Darwin's materialism and suggests that deistic references in his writings may have been attempts to neutralise hostility (pp. 201-217). But neither the notebooks nor the Sketch were intended for publication. Ospovat denied materialism in the same passage (Ospovat, 1981, p. 67). Darwin was at this stage experimenting with different attitudes, and testing out ideas and theories against his own experience. Perhaps C 166 should be seen as reflecting one of a range of possibilities under consideration.
- 26 The full text is given, and authorship attributed to Hensleigh, in Manier, 1978, pp. 220-223. The notes are undated but seem to relate to the conversations recorded in M 61e, which took place in the summer of 1838; M 73.
- 27 B 101 and see Ospovat, 1981, p. 68.
- 28 Martineau, 1983, I, 105; Pichanick, 1982, pp. 25-27.
- 29 Manier, 1978, p. 93, Beer, 1983, p. 49 and see Paradis, 1981. On Wordsworth's influence on Harriet Martineau, see Pichanick, 1982, p. 42. Sketch, p. 87, cf. Autobiography, p. 53.
- 30 M 135-6, see also M 69.
- 31 Harriet Martineau's views are recorded in M 142 and 151, and see her "Essay on the Proper Use of the Prospective

- Faculty", Monthly Repository, iv, pp. 669-73, quoted in Webb, 1960, p. 30. Carlyle, Sartor Resartus, pp. 116, 137. M 151.
- 32 Martineau, 1983, I, 109 and see Pichanick, 1980, pp. 170-174; M 74.
- 33 Martineau, 1983, II, 280, and see II, 189; fears of amorality supported the deism of other contemporary doubters, for example George Eliot (Murphy, 1955, p. 815). The answer supplied to Harriet by Atkinson came close to Darwin's concept of the social instinct: Martineau, 1983, II, 288.
- 34 Autobiography, p. 50; Vorzimmer, 1977; Forbes, 1952, p. 78. Carlyle rejected miracles on the grounds that all of life was miraculous, "thy very blankets and breeches are miracles": Sartor Resartus, p. 165. On the connection between popular atheism and radical politics see Royle, 1974, chapter 2, Budd, 1977, chapter 1, and Desmond, 1988.
- 35 Carlyle, Sartor Resartus, p. 137; Froude, 1902, I, 91; A. and M. McQueen Simpson, eds., 1977, p. 83; Carlyle, Sartor Resartus, pp. 99, 142 and see Chartism, p. 49; Turner, 1975, p. 330.
- 36 Wigmore-Beddoes, 1971, pp. 57, 64; Krause, 1879, pp. 44-5; Wigmore-Beddoes, 1971, p. 112. An example of "acceptable" heterodoxy was that of Malthus: he rejected the doctrine of eternal punishment on the grounds that sin and failure were inevitable concomitants of a universe governed by secondary law. His heterodoxy did not prevent the adoption of his Law of Population by

- orthodox churchmen like Archbishop Sumner or the Rev. Thomas Chalmers: Santurri, 1982, p. 321, Boner, 1955, p. 80, Inglis, 1971, p. 221.
- 37 Coleridge quoted by Wigmore-Beddoes, 1971, p. 90.
- 38 Brown, 1986, p. 17: Brown contends that after the removal to Down, Darwin drew back from this position and embraced a minimal theism. On Darwin's serious attitude to religious issues, see Darwin to W. D. Fox, 23 August 1841, Correspondence, 2, 303.
- 39 Schweber, 1977, p. 309: Schweber argues that M 151 is evidence of Darwin's having abandoned even the First Cause argument, but that passage relates to a discussion of the evolution of the moral sense and does not directly address the First Cause argument. On the impact of the death of Annie see Moore, 1987. Harriet Martineau complained to Fanny Wedgwood of the creationist language in the Origin, language which was "sure to be misunderstood, in the face of all the rest of the book": Harriet Martineau to Fanny Wedgwood, 3 March 1860, Keele, 32975-57. Darwin to N. D. Doedes, 2 April 1873, LLD, I, 306, Calendar 8837.
- 40 Greene, 1981, pp. 135-137. The analogy of the life of the individual with the life of the species had also been used by Lyell, as noted by Darwin in his Geological Notes, 1835 (Herbert, 1974, p. 236 n56). Sketch, p. 86.

MALTHUS

1) Darwin's Debt to Malthus: a Historiographical survey

The nature of Darwin's debt to Malthus is one of the most contentious issues in Darwin studies. In his survey of recent advances in the social history of science, Steven Shapin points to the Malthus debate as a prime example of traditionalist resistance to the assertion of the scientific use of social resources:

To many writers an "influence" from Malthus (or from Paley) has not been something to describe and explain, but something to be "explained away" since, from present perspectives, it would be regarded as an illegitimate inclusion in properly objective scientific thought.

Sir Gavin de Beer was a prominent example of this traditionalist resistance. In Streams of Culture he derided Malthus as a plagiarist, since the concept of population pressure was not his own, and claimed that he made false extrapolations from that concept based on an underestimate of man's potential for increasing his food supply. He moved little from the opinion voiced in his earlier biography of Darwin (written before the discovery of the excised pages of the D notebook in which Darwin described the impact of his reading of Malthus) that "The view that Darwin was led to the idea of natural selection by the social and economic conditions of Victorian England is devoid of foundation." A

major difficulty for De Beer and others who have wished to minimise the influence of Malthus is the declared indebtedness of Darwin himself, in correspondence, in the Origin, and in the Autobiography:

In October 1838 [sic], that is fifteen months after I had begun my systematic enquiry, I happened to read for amusement "Malthus on Population", and being well prepared to appreciate the struggle for existence which everywhere goes on from long-continued observation of the habits of animals and plants, it at once struck me that under these circumstances favourable variations would tend to be preserved and unfavourable ones to be destroyed. The result of this would be the formation of new species.¹

Recent Darwin historiography has moved away from the dismissive sentiments of De Beer and has ascribed a positive function to Darwin's reading of the Essay on the Principle of Population. Its precise nature has however remained elusive, as is clear from the variety of approaches discussed by David Oldroyd in his survey of the secondary literature to 1982. One major theme is that Malthus's use of population arithmetic appealed to Darwin (Malthus was a founder member of the statistical Section at the 1833 BAAS meeting), enabling him to understand the intensity of struggle in nature, and endowing superfecundity with the status of a Newtonian force. But since it was upon his arithmetic that Malthus's Law of Population foundered in the mid-nineteenth century, it seems unlikely that Darwin should have continued to credit Malthus as an important influence if that were its source.²

Sandra Herbert's detailed analysis of the transmutation notebooks led her to conclude that it was his reading of Malthus that led Darwin to recognise the existence of struggle at an individual, intra-specific level. It was this recognition that led to the idea of population pressure as a creative force. But P. J. Bowler, in a complex argument, denied that intra-specific struggle was an important feature of Malthus's work, emphasising instead that Malthus concentrated on population dynamics, relevant to interspecific struggle. The dichotomy between inter-specific and intra-specific struggle is to a large extent an artefact of the textual analyst: Malthus's Essay did not distinguish between different kinds of struggle, passages depicting infanticide and cannibalism being interspersed with passages recounting tribal wars. Struggle was a universal phenomenon in which individuals, tribes and races were alike involved. Darwin similarly employed "struggle" to cover environmental, interspecific and individual struggle. Perhaps this particular argument has been settled with the pronouncement of Hodge and Kohn that a major value of Malthus was to show that interspecific and intraspecific struggle were analogous.³⁸

Other Darwin scholars have suggested that the answer does not lie specifically in the autumn 1838 reading of the Essay on the Principle of Population so much as in the contemporary prestige of population theory. For Dov

Ospovat, the Malthus episode was an important but not conclusive stage in the development of the theory. From Malthus, Darwin gained the idea that organisms did not produce adaptations automatically perfected to fill a particular gap in the economy of nature; rather, those adaptations which were perfect would be forced by population pressure into the appropriate gap whilst others would perish. Only over a period of several months did Darwin come to see population pressure as producing adaptation, rather than as a more traditional form of negative selection. Howard Gruber also denies any "Eureka" response to the reading of Malthus, emphasising instead Darwin's prior acquaintance with the principle of superfecundity, with Malthus's Law of Population and with the concept of negative selection. And Manier has suggested that "Malthus' *reputation* , or that aspect of it most familiar to Darwin, may have been as decisive a part of the influence as anything Malthus actually wrote."⁴

David Kohn, in "Theories to Work by", offered one of the most positive assessments of the role of Malthus, crediting him with leading Darwin to the idea of imperfect adaptation, and with providing an "external" perspective on the work of natural historians, who, in the tradition of Paley, adopted an unquestioning attitude to the balance of nature: "What is clear is that intellectually Darwin was not necessarily headed toward the discovery of selection when he read Malthus". However, in "The Immediate Origins of Natural

Selection", written with M. J. S. Hodge, Kohn drew back from this conclusion. The theory of natural selection was not the product of a sudden insight but rather of a lengthy process which encompassed Malthus. Malthus's role was to reinforce Darwin's vision of the interconnection between all organic life.⁵

The most compelling demand for a different approach, looking at the work of Malthus and Darwin in their contemporary context rather than focussing exclusively on the primary sources, was made by Robert Young. Young took Engels's description of Darwin's theory, the transference from society to nature of bourgeois economic ideology and Malthusian population theory, as a starting point; by focussing on the works of other writers besides Darwin, he demonstrated the degree to which Malthusian theory was all-pervasive in the biological literature of the early-nineteenth century and an integral part of the debate within natural theology. Malthus's influence should be discussed not within the narrow confines of the precise formulation of the theory of evolution by natural selection, but by reference to the way in which he altered the perspective from which Darwin, and others, viewed the world and man's place in it. Young argued that the minutiae of documentary analysis must be balanced by an interest in "the large-scale forces and

their resolutions, and the prevailing compromises of the period, as well as the issues that frame the inquiries of disciplines and the figures in them." Young's arguments are an invaluable corrective to the temptation that the abundance of Darwinian source materials induces, a temptation to become so involved with documentary analysis that the cultural context of their authorship is overlooked.⁴

In his survey, Oldroyd identified a convergence of ideas about the role of Malthus. He suggested a growing consensus in favour of Young's thesis of a "common context" for social and biological thought, and in favour of the view that Malthus performed for Darwin a valuable service, "enabling him to conceptualize just how the struggle for existence might bring about species change through "wedging"." But despite the multiplication of studies of the Malthus issue, and the degree of consensus noted by Oldroyd, there has been little advance in understanding how and why Malthus was accessible to Darwin in the autumn of 1838. Studies have tended to focus on comparative analysis of Malthus's Essay and Darwin's writings. But the measure of an author's influence is not necessarily to be found in a direct transference of ideas; it may be detected in other ways of greater long-term significance. Furthermore, the text of a document can have different meanings for one raised amid debates revolving around that document than it has for the

historian inheriting the judgements upon it of his predecessors. Nowhere is this more evident than in the historiography of Malthus which has persisted in seeing him as a relic of a repressive, reactionary, aristocratic past. Although he was so interpreted by radical writers in the early years of the nineteenth century, it was not the way in which he was viewed by Darwin and his contemporaries. Malthus wrote the Essay in 1798; the sixth edition, read by Darwin in the autumn of 1838, was not written until 1826. In the period between, Malthus's theory had been adopted as part of the economic creed of a large section of the bourgeois public. Darwin's understanding of the Essay was shaped by contemporary opinion about social policy, by his own personal experiences and by the attitudes of his immediate social circle to the law of population and to Malthus.⁷

2) Malthus and the debate on Poverty

A prerequisite for understanding what Malthus meant to Darwin in 1838 is an appreciation of the cultural context, both of the edition of the Essay on the Principle of Population read by Darwin, and of its reception by an educated public in the 1830s. Many of the more notorious passages of the early editions are irrelevant in this context. An often-quoted passage is that denying the right to relief, in the 2nd edition of 1803:

A man who is born into a world already possessed, if he cannot get subsistence from his parents on whom he has a just demand, and if the society do not want his labour,

has no claim of right to the smallest portion of food, and, in fact, has no business to be where he is. At nature's mighty feast there is no vacant cover for him. She tells him to be gone, and will quickly execute her own orders, if he do not work upon the compassion of some of her guests.

Future editions continued to maintain that the right to relief was fictional, but the above passage was expunged. Nevertheless, the image of Malthus that persists is that of the early Malthus, the spectre of darkness against which the forces of light have had to battle: this image must be replaced with a more rational assessment of Malthusianism in the 1830's, before the question of the influence of Malthus on Darwin can be addressed.²

Malthus's first edition of 1798 was a brief polemic directed against the utopian speculations of William Godwin. The latter's Enquiry concerning Political Justice, published in 1793, postulated a society characterised by altruism in which propagation would cease and immortality be achieved. Malthus's father, a liberal scholar, amateur botanist, and friend of Rousseau, debated Godwin's ideas with his son who, having graduated a Wrangler and become a fellow of Jesus College, Cambridge, had taken orders and acquired a curacy near the family home. In 1797 Godwin published an essay urging a society based on social and economic equality; the previous year Pitt had introduced a Bill allowing for provision of relief to the poor, assessed according to the number of children in the family. Malthus, long convinced

that population pressure must defy Utopia, and any substantial improvement in the living conditions of the poor, sat down to prove the matter in the Essay on the Principle of Population.⁹

Malthus did not claim to have discovered the law of population; his purpose was to expose its operation with sufficient force and clarity to gain its acceptance as an invariable law of nature. He used the reputation of earlier exponents of the law to augment the authority of his own case. Plato, according to Malthus, was aware of the tendency of population to increase beyond the means of subsistence. And he referred to Gibbon, who, "speaking of Arabia, observes that "the measure of population is regulated by the means of subsistence..."¹⁰

The basic argument was simple: on the most conservative estimate the natural rate of increase would lead to a doubling of population in 25 years. On the most optimistic estimate food production might be increased at an arithmetical rate. Since population levels cannot outstrip the means of subsistence, powerful checks to population must constantly be at work to enforce the proper balance. These checks Malthus described as positive, in the sense of increasing the mortality rate (famine, disease, war) or preventive, in the sense of lowering the birth rate (sexual malpractice, drunkenness, abortion); all, with the exception

of moral restraint, a preventive check introduced in the second edition of the Essay, fell under the categories of vice or misery. Any improvement in living conditions automatically generates a rise in the birth rate or a fall in the death rate: the resultant population increase ensures that those at the bottom of the social hierarchy are once more depressed to the level of subsistence.

Malthus's object in writing the Essay was not simply to disprove utopianism. He addressed himself to the governing classes with social prescriptions for the treatment of poverty, including the abolition of the Poor Laws. The Poor Laws, which derived from an Elizabethan statute guaranteeing the right to work and the right to relief, had been under attack for some time. Indeed, "A Dissertation on the Poor Laws", written by Joseph Townsend in 1786, had been a major influence on Malthus. Townsend argued that population was regulated by the quantity of food, and further, that "The poor know little of the motives which stimulate the higher ranks to action - pride, honour and ambition. In general it is only hunger which can spur and goad them on to labour." It followed that the Poor Laws, which acted to remove this stimulus, should be abolished, and indeed the major effect of Malthus's treatise was to shift the burden of proof from the objectors to the defenders of poor relief. For notwithstanding Hazlitt's objection that the Essay was a truism, and Godwin's criticism of points of detail, the

debate on social policy from 1800 on took place increasingly within a Malthusian framework, with the law of population accepted as a problem which must be faced up to in any projected reform.¹¹

For fear of popular unrest, structural changes in the Poor Laws were repeatedly deferred, even as the need for such changes became more apparent in the wake of the economic dislocation that followed the end of the Napoleonic Wars. Malthus accepted that abolition would have to be gradual, and proposed a statute to the effect that no child born after a certain date would be entitled to relief: existing recipients of relief would continue to receive it. In the face of the economic collapse of 1825-6 he moderated his earlier opposition to emigration. He had always considered it a spurious solution to overpopulation as any reductions would be immediately offset by Irish immigration or by an increased birth rate. Now, before the Select Committee on Emigration in 1827, Malthus accepted that it could be a useful short-term palliative, a change of opinion he wrote into the sixth edition of the Essay. Finally, in 1833, a Royal Commission report, drafted by Nassau Senior and Edwin Chadwick, urged the differential treatment of the deserving poor and the indigent, and the introduction of the principle of "less eligibility" to ensure that none but the destitute would apply for relief. The Poor Law Amendment Act was passed the following year, putting the new principle into practice by

the establishment of Union Workhouses, the conditions inside which were to be a sufficient deterrent to guarantee that those who could manage without would do so.¹²

The Act was passed in the year of Malthus's death, the "less eligibility" principle intended to satisfy the objection that the provision of relief would encourage indigence. It encapsulated a major change in social theory that had occurred in the previous half century, a change which was reflected in and advanced by the ideas of Adam Smith and Malthus. It suggested that the poor did not constitute an estate of the realm as was inferred by the rights conferred upon them under the old Elizabethan statutes; rather poverty was eradicable given the necessary political will and appropriate social institutions. The Poor Law Amendment Act thus epitomised the dynamic society in which the Darwin brothers, Harriet Martineau and the Wedgwoods enthusiastically, and Carlyle more reluctantly but no less self-consciously, participated.

By 1834 Malthus's Essay had been through six editions, and significant changes had taken place both in the text and in the implications drawn from it. The title of the second and subsequent editions reflected the shift from polemical dystopia to economic treatise: An Essay on the Principle of Population; or a View of its Past and Present Effects on Human Happiness, with an Inquiry into Our Prospects

Respecting the Future Removal or Mitigation of the Evils
which it Occasions. The most important change in content was the introduction of the category of moral restraint as a preventive check. It involved delaying marriage until the means to support a family were available. Its exercise strengthened man's character at the same time as it eased the problem of overpopulation and gave rise to an expectation of the gradual improvement of the human race. Given Malthus's own policy recommendations for the strengthening of moral restraint, Nassau Senior's advice that the poor be given a stake in society, as an incentive to the practice of prudence, appears less of a radical departure. The way was opened for the advocacy by second generation Malthusians like Harriet Martineau of a wide variety of social reforms, without any sacrifice of faith in the law of population.¹³

Despite the popular vilification of Malthus as an agent of repression, a reader of the sixth edition of the Essay need not have had his sensitivities offended. The most notorious passages had been excised, the harsher elements of the principle softened and the pathway to improvement revealed. Although often referred to as a spokesman of the landed interest, because of his support for the Corn Laws, the characterisation is misleading. Malthus's defence of the Corn Laws, never as wholehearted as has been supposed, sprang from his belief that a nation must maintain a balance between agriculture and manufacture. If the latter were allowed to

become proportionately too large a section of the economy, then the nation would become subject to the economic fluctuations of other countries over which it had no control. A proper balance between the two would ensure that "the capital and population of such a country can never be forced to make a retrograde movement merely by the natural progress of other countries to that state of improvement to which they are all constantly tending." (This passage is noteworthy for its assumption of a tendency towards economic improvement). Malthus's position on the Corn Laws has tended to disguise his identity with classical political economy. In fact he made it clear that the issue of the Corn Laws was exceptional: free trade must always be the rule. Malthus's Essay rested firmly in the tradition of Adam Smith: a discussion of the contrasts between the Spartan people, valuing military qualities, and civilised societies where social affections are highly prized, concluded,

Like the commodities in a market, those virtues will be produced in the greatest quantity for which there is the greatest demand; and where patience under pain and privations, and extravagant patriotic sacrifices are the most called for, it is a melancholy indication of the misery of the people and the insecurity of the state.¹⁴

Another prevalent view is to see Malthus as champion of the aristocracy: again Darwin and his friends would not have made such a mistake. Malthus believed in the existence of a

leisured class, as being necessary to fulfill a governing role, but leisure was not to be confused with idleness or luxuriousness. Furthermore, since control of population through moral restraint would lead to higher wages, because of the lack of a labour surplus, the rich would have to accept a consequently diminished share of national wealth as their contribution to the elimination of poverty.¹⁵

Malthus urged that abolition of poor relief be accompanied by a system of national education to develop moral character and teach people their social responsibilities; he rejected the popular fear that education of the lower orders would introduce revolutionary sentiments. Education posed a threat to the state only where it was possessed by a minority of insurrectionaries who could use their knowledge to hold sway over the ignorant masses. He also urged an extension of property ownership and a widening of the franchise, as ways of promoting that sense of self-respect which would encourage the practice of moral restraint. The provision of habitations for the poor he rejected on the grounds that the shortage of dwellings was a factor in keeping down population increase, but improvement of the quality of existing dwellings was to be encouraged, again because of the beneficial effect on the occupier's self-respect. Malthus did not oppose private charity, which

ennobled the donor without degrading the recipient, and he positively encouraged schemes for the enhancement of the self-reliance of the labouring classes. The desirability of their embourgeoisement was a key feature of the emerging middle class ideology to which Malthus was a powerful contributor. To this new tradition of middle class paternalism did Darwin adhere, when, following his removal to Down in 1842, he immersed himself in parish activities.¹⁶

There was nothing in the ethics of Malthusianism that was offensive to representatives of the new bourgeoisie, and there was much in Malthus that could be read as championing their interests: "most of the effects of manufactures and commerce on the general state of society are in the highest degree beneficial", he wrote, " They...give a new and happier structure to society, by increasing the proportion of the middle classes, that body on which the liberty, public spirit and good government of every country must mainly depend". Despite the hostility of Tory paternalism and popular radicalism, the principle of population was an assumption in the social circles in which Darwin was raised. "I wish I could preach singularity among my poor neighbours I know;" wrote Bessie Wedgwood in 1827, "for I do believe that if nobody would marry who could not maintain a family till they were 30 years old, there would be no poor in England." Her son Hensleigh had to obey this precept when his marriage to

Fanny Mackintosh was deferred until he secured the post of police magistrate. Indeed Malthus was himself suffering the anguish of marriage postponed as he wrote his "nature's mighty feast" passage, an anguish removed when he was appointed to be rector of Walesby a few months later. In a real sense, Malthus's Essay conferred upon middle class practice the blessing of economic theory: he was articulating the philosophy of the new bourgeoisie.¹⁷

Evidence of the assimilation of population theory may be found in Darwin's Beagle Diary. In Mercedes in November-December 1833 he recorded a conversation with two inhabitants:

I asked two men why they did not work; one said that the days were too long; the other that he was too poor. The number of horses and profusion of food is the destruction of all industry.

Again, describing native life in New South Wales in January 1836 he wrote:

It is said, that from the wandering life of these people, great numbers of their children die in very early infancy. When the difficulty in procuring food is increased, of course the population must be repressed.- a manner almost instantaneous as compared to what takes place in civilised life, where the father may add to his labour without destroying his offspring.

The diary also reveals the acceptance by Darwin of some of the political implications of the law of population. Malthus had argued against a society based on equality on the grounds that such a system removed any incentive to better oneself or to exercise restraint. Of Tierra del Fuego, Darwin wrote in

February 1833 "The perfect equality of all the inhabitants will for many years prevent their civilisation....Until some chief arises, who by his power might be able to keep for himself such presents as animals etc etc, there must be an end to all hopes of bettering their condition."¹⁸

In much of the historiography of Darwin and Malthus, their identity in outlook has been obscured, whilst deep divisions between them have been alleged. It has been suggested that Malthus's theory was one of stasis, whilst Darwin's provided for endless change. Manier, for example, argued that Darwin's use of the term struggle "obviously overcame the limitations implied by Malthus' account of a static environment and finally inflexible social organization". But the theodicy expressed in the first edition and developed in subsequent editions offered a pathway to progress. Book IV of the sixth edition was subtitled "Of Our Future Prospects Respecting the Removal or Mitigation of the Evils arising from the Principle of Population". After lengthy discussion of the principle of moral restraint, Malthus concluded:

though our future prospects respecting the mitigation of the evils arising from the principle of population may not be so bright as we could wish, yet they are far from being entirely disheartening, and by no means preclude that gradual and progressive improvement in human society which, before the late wild speculation on this subject, was the object of rational expectation.

Natural selection, like the law of population, allowed improvement, but the architect of neither theory endorsed the

concept of invariable, automatic, and painless progress so popular in the late-eighteenth century. And even in the 1870s, with the influence of Spencerian perfectibilism at its height, Darwin confirmed to a correspondent that, "After long reflection I cannot avoid the conviction that no innate tendency to progressive development exists." Darwin was no perfectibilist, and Malthus was not anti-progressive.¹⁹

Keegan and Gruber are among those who have alleged a profound division in the ideas of Malthus and those of Darwin "He turned Malthus upside down. In Darwin's theory, superfecundity and sexuality, rather than being the source of suffering, became part and parcel of the whole system of nature and the engine of progressive evolution". But for Malthus just as much as for Darwin, superfecundity was the agent of amelioration and suffering was an inevitable consequence thereof. The attempt to drive an ideological wedge between them fails on this count too.²⁰

3) Pathways to Malthus

The image of Malthus received by Darwin and his contemporaries in the 1830s was not that of the pessimistic reactionary. The ideas and social prescriptions supported by Malthus, from opposition to slavery to education, were shared by Darwin while the law of population was absorbed into the corpus of beliefs around which middle class ideology was constructed. This unconscious assumption of Malthusian theory

was reinforced by formal exposure when at Cambridge Darwin read Paley's Natural Theology. Paley followed Malthus, "Mankind will in every country breed up to a certain point of distress", and adopted his theodicy, that hardship was necessary to overcome man's natural indolence: "Seasons of scarcity themselves are not without their advantages;...They call forth new exertions; they set contrivance and ingenuity at work..."²¹

Darwin's knowledge of Malthus was also reinforced by personal connections. Sir James Mackintosh, whom Darwin had met at Maer in 1827, was a close and long-standing friend and disciple of Malthus. As an early convert he had delivered in 1799 a series of lectures "On the Law of Nature and Nations" in which he rejected his former sympathies with Godwin and pronounced his acceptance of the principle of population. His friendship with Malthus was strengthened when he joined him in 1818 at the East India College at Haileybury, where Malthus had been a Professor since 1805. Mackintosh was succeeded in 1824 by William Empson who, writing in the Edinburgh Review in 1837, remembered him as having said: "I have known Adam Smith slightly, Ricardo well, Malthus intimately. Is it not something to say for a science that its three great masters were about the three best men I ever knew?" Malthus and Mackintosh continued close friends even after the latter's departure from Haileybury, and their relationship was reflected in the next generation between

Fanny and Malthus's surviving daughter, Emily. Emily was bridesmaid at Fanny's wedding to Hensleigh Wedgwood in January 1832, as Fanny Wedgwood reported to her brother Frank:

Hensleigh and Fanny behaved with great decorum, and they neither of them had their spectacles on; the Clerk was rather puzzled to find out who were the bridesmaids; he came whispering about for them, and Miss Malthus and I stood forward, and I suppose Emma was the third, as we were all three in lilac silk....

Mackintosh died in 1832, and Malthus in 1834, but their daughters continued to be good friends.²²

Another link between Malthus and Darwin was Harriet Martineau. She had tackled the population question from a strictly Malthusian vantage point in "Weal and Woe in Garveloch" written in 1832 as one of the Illustrations of Political Economy series. This was perhaps one of the "few little books...written by Miss Martineau" sent to Darwin on the Beagle by his sister Caroline. The story depicted a small society on a Western Island off the coast of Scotland, where a crop failure brought disaster to a community whose population had already been living at subsistence level. The hero of the story, Ronald, witnessing at first hand the direct effects of overpopulation, determined to relinquish his courtship of the widow Katie Cuthbert who had four children already. His sister Ella took it upon herself to explain the sad truth to Katie: "If the passionate man will not restrain his anger, he must expect punishment at the

hands of him whom he had injured; and if he imprudently indulges his love he must not complain when poverty, disease and death lay waste his family."²³

Notwithstanding the vicious personal attack prompted by this tale which was launched by Lockhart and Croker in the Quarterly Review, Harriet returned to the subject in her Poor Laws and Paupers Illustrated. Commissioned by Lord Brougham and published by the Society for the Diffusion of Useful Knowledge, their purpose was to prepare the way in the public mind for the forthcoming reform of the Poor Laws. In the four stories, each set in a different community, the Poor Laws were likened to an infectious disease, spreading from one area to another, corrupting and degrading the honest and virtuous as it passed. The evils were listed repeatedly: the disincentive to self-reliance, the sacrifice of the industrious to the indigent, the encouragement to irresponsible child-bearing, and the petty corruption that was rife among parish poor law administrators. The tales were unashamedly didactic, and Harriet drew upon the evidence given to the Royal Commission on the Poor Laws for her arguments. As she wrote in the Preface:

I have unquestionable authority in the Reports of the Poor Law Commissioners, and the testimony of others who are occupied in the administration of parish affairs, for every parochial abuse and every pauper encroachment here exhibited...

That there were such abuses is undoubted; more suspect was her claim that she had taken "no pains to select the worst

instances of either that have come within my knowledge." It was her purpose to show that the abuses stemmed from the institution: reform the institution and the abuses would stop: "The more clearly evils can be referred to an institution, the more cheering are the expectations of what may be effected by its amendment."²⁴

Many of the now traditional Malthusian arguments were deployed in these tales. In the first, "The Parish", overseer Donkin considered the building of cottages for paupers as a means of avoiding having to pay the corrupt landlord Bloggs for housing them in squalid inadequate dwellings. "Build away, pray;" replied Bloggs, "you will be just where you were before, as concerns my tenants. Cottages do not stand empty long where there are young people of the parish ready to marry". The squire, a man with a reputation for being soft on paupers, was used to illustrate a Malthusian objection to poor relief, its favouring of the indigent over the deserving; "Why, hang it!" said the squire, "you would make out that I am hard-hearted to all the good people, and kind to all the bad." And this point, the demoralisation of the honest labourer, was an important theme of the other tales as well.²⁵

Both the Illustrations of Political Economy and Poor Laws and Paupers Illustrated enjoyed a wide circulation, and served to identify Harriet Martineau closely with the

arguments of Malthus. One of the converts she mentioned in her Autobiography was Lord Henley who, on being introduced to her, informed her that "Since reading "Cousin Marshall" and others of my Numbers, he had dropped his subscriptions to some hurtful charities, and had devoted his funds to Education, Benefit Societies and Emigration." Leigh Hunt, whom Harriet was subsequently to meet on her visits to the Carlyles, had also made the association, which he characterised in his satire, Captain Sword and Captain Pen in 1835:

I own I can't see, any more than Dame Nature,
Why love should await dear good Harriet's dictature!
But great is earth's need for some love-legislature.²²⁴

Malthus himself was pleased to make the acquaintance of the lady who had so favourably and accurately represented his views, and an introduction was arranged. Despite the cleft palate which affected his speech, he was one of the few people Harriet could hear clearly without the aid of her trumpet. They became friends and Harriet was invited to stay at the Malthus's home at Haileybury. She remembered her stay with great affection, though it was to be her only one, for Malthus died while she was in America. Although their acquaintance was brief, Harriet was fond of him: "a more simple-minded, virtuous man, full of domestic affections, than Mr Malthus, could not be found in all England", she wrote, and although she later questioned the assumption that population unchecked must outstrip subsistence, she did not

question "that the desire of his heart and the aim of his work were that domestic virtue and happiness should be placed within the reach of all, as Nature intended them to be." He had witnessed a society characterised by great poverty and high infant mortality: "Prudence as to the time of marriage, and to making due provision for it was, one would think, a harmless recommendation enough, under the circumstances." Looking back, from the perspective of 1855, she concluded that:

The spectacle of the good man in his daily life, in contrast with the representations of him in the periodical literature of the time, impressed upon me, more forcibly than any thing in my own experience, the everlasting fact that the reformers of morality, personal and social, are always subject at the outset to the imputation of immorality from those interested in the continuance of corruption.²⁷

Thomas Carlyle was also interested in Malthus and the law of population. He devoted a chapter of Sartor Resartus to Malthus, a chapter of Chartism to the New Poor Law, and continued to write of the association of laissez-faire and Malthusianism in Past and Present. Although these books were not read by Darwin prior to his 1838 reading of Malthus, (he read Chartism in 1840, Sartor Resartus in 1841 and Past and Present in 1843) they are useful as reflecting Carlyle's views in the period under discussion. Superficially he had more in common with Malthus than did Harriet: he abhorred man's natural indolence and folly and he applauded the fact that the need to survive channeled man's energies into work;

Idleness was for Carlyle, as for Malthus, a human characteristic that must be repressed: "He that will not work according to his faculty, let him perish according to his necessity: there is no law juster than that". However, he saw in the law of population a justification for inertia in the face of human suffering and this he refused to accept.²⁹

In Book III of Sartor Resartus, chapter four is devoted to Teufelsdröckh's annotations of a tract published by the Hofrath Heuschrecke called the "Institute for the Repression of Population". Heuschrecke was a disciple of Malthus: "A deadly fear of Population possesses the Hofrath; something like a fixed-idea, undoubtedly akin to the more diluted forms of madness." Although he questioned Malthus's conservative estimates on food production, Teufelsdröckh did not challenge the validity of the law of population. He rejected it on the *a priori* grounds of its offensiveness to human dignity. Of the "toilworn Craftsman", Teufelsdröckh wrote:

For us was thy back so bent, for us were thy straight limbs and fingers so deformed: thou wert our Conscript, on whom the lot fell, and fighting our battles wert so marred. For in thee too lay a god-created Form, but it was not to be unfolded...

It was this spiritual impoverishment, rather than the burden of overwork, that was to be regretted, for "we must all toil, or steal (howsoever we name our stealing)". And meanwhile the solution to overpopulation could be found in emigration; for

what portion of this inconsiderable terraqueous Globe have ye actually tilled and delved, till it will grow no more? How thick stands your Population in the Pampas and

Savannas of America; round ancient Carthage, and in the interior of Africa; on both slopes of the Altaic chain, in the central Platform of Asia; in Spain, Greece, Turkey, Crim Tartary, the Curragh of Kildare?²⁷

Sartor Resartus was written and published in serial form before the Poor Law Amendment Act. In Chartism, Carlyle returned to the question of overpopulation in the context of that Act. Its "less eligibility" principle he stripped of its theoretical justifications and laid bare in all the cruelty of its practical application:

If paupers are made miserable, paupers will needs decline in multitude. It is a secret known to all rat-catchers: stop up the granary-crevices, afflict with continual mewing, alarm and going-off of traps, your "chargeable labourers" disappear, and cease from the establishment. A still briefer method is that of arsenic...

Carlyle condemned the laissez-faire arguments used to buttress the policy behind the reform:

Thou art all right, and shalt scramble even so; and whoever in the press is trodden down, has only to lie there and be trampled broad: - Such at bottom seems to be the chief social principle, if principle it have, which the Poor Law Amendment Act has the merit of courageously asserting, in opposition to many things. A Chief social principle which this present writer for one, will by no manner of means believe in, but pronounce at all fit times to be false, heretical and damnable, if ever aught was!

Above all, Carlyle poured scorn on the spiritual poverty of those who could prescribe nothing better than a careless disregard of the unfortunate in society. Yet he condemned equally the old system, in language traditionally used by the poor law reformers, as "a bounty on unthrift, idleness,

bastardy and beer-drinking". His prescription was for just and wise government, and a recognition of the responsibility of a master to his labourers: "Laissez-faire, laissez-passer! The master of horses, when the summer labour is done, has to feed his horses through the winter." Moral restraint was impossible of application, even were it not to be dismissed for its spiritual barrenness: "Dreary, stolid, dismal, without hope for this world or the next, is all that of the preventive check and the denial of the preventive check." But he could not counter the underlying argument that overpopulation was the cause of poverty, and once again proposed emigration to soak up the labour surplus.³⁰

In Past and Present Carlyle again attacked laissez-faire. To base a society on such a policy was a contradiction in terms:

We call it a Society; and go about professing openly the totallest separation, isolation. Our life is not a mutual helpfulnes; but rather, cloaked under due laws-of-war, named "fair competition" and so forth, it is a mutual hostility.

He listed several areas which called for government intervention: conditions of work in factories and mines, sanitary regulations, provision of green areas within urban agglomerations, and, especially, education and emigration. Thus Carlyle rejected the practical relevance of the law of population and condemned the social prescriptions extrapolated from it, but at no stage did he attempt to disprove it. Furthermore he couched his own analysis of the

problems facing the labourers of England in the language of political economy: the poverty of the labouring classes was a consequence of too many labourers competing for work. In so far as Malthus impressed Darwin with the primacy of struggle as a feature of life, Carlyle's writings could only support this impression. And in so far as Darwin's interest in Malthus derived from his commitment to invariable laws of nature, Carlyle's criticisms of Malthusianism as a social policy were beside the point.³¹

A belief in invariable laws of nature was an area of common ground between Malthus and Charles Lyell, himself linked to Malthus, if tenuously, through the close friendship that had existed between Malthus and his wife's uncle, Francis Horner, before the latter's death in 1817. The law of population conformed to Lyell's view of the cyclical nature of world history: checks to population lead to a reduction in population levels which allow an improvement in living standards; the weakening of the checks to population leads to an increase in population and a consequent lowering of living standards and reimposition of those checks. Malthus's law satisfied the demands of Lyellian uniformitarianism:

this constantly subsisting cause of periodical misery has existed ever since we have had any histories of mankind, does exist at present, and will for ever continue to exist, unless some decided change takes place in the physical constitution of our nature."

Arguing against Condorcet's assumption of longevity in the future, Malthus retorted,

if the laws of nature be thus fickle and inconstant; if it can be affirmed, and be believed, that they will change, when for ages and ages they have appeared immutable; the human mind will no longer have any incitements to inquiry, but must remain sunk in inactive torpor, or amuse itself only in bewildering dreams and extravagant fancies.³²

Finally, Darwin could have expected to hear a sympathetic appraisal of Malthus from his peers in natural history. Whewell had met Malthus in 1829 and become a fond admirer. Herschel too considered him "one of the most profound but at the same time popular writers of our time".³³

Darwin wrote that he "happened to read" the Essay on the Principle of Population "for amusement". In the light of his highly organised research programme, this claim seems dubious (and was perhaps calculated to diminish the importance of Malthus in the minds of his readers). On the 6th September 1838, Darwin had completed his Glen Roy paper, and he threw himself into his species work, excitedly reporting to Lyell on the 13th that the facts he had accumulated were beginning "to group themselves clearly under sub-laws." After three weeks of intensive species work Darwin was confident that he was close to finding the key to transmutation. Already during the summer, his growing conviction that man could serve as an analogy for all organic life had led him to study works of political economy and philosophy; he had annotated Brewster's Review of Comte, and Harriet Martineau's How to Observe amongst many others. Darwin took up Malthus's Essay

deliberately, at a time when he believed his speculation to be approaching a decisive stage, in the expectation that it would have for him some heuristic value.³⁴

It was on September 28th that Darwin recorded his comments on Malthus in the D notebook. During the previous two weeks the name of Malthus, revived in the wake of the Chartist agitation that was sweeping the provinces, must have been a matter for intense discussion within the Erasmus circle. The Charter, drafted by Lovett of the London Working Men's Association (LWMA) and Francis Place, had been published in May 1838, and Chartist groups had sprung up around the country. The control of the LWMA ensured that London witnessed few disturbances, but provincial disturbances were reported in detail in Darwin's daily newspaper, The Times. On September 25th for example one Dr. Fletcher of Bury was reported as a speaker at a demonstration in Ashton:

He then spoke of the cruel and detestable doctrines of the Malthusians and political economists wanted cheap wages for both manufacturing and agricultural labourers, in order that they might monopolise the industry and capital of the country at the expense of the mass of the people, whose independence they were attempting to destroy by reducing their wages; and then, when they can no longer work, in fact, when they are nearly starved to death, they will send them to perish in the bastilles of the damnable New Poor Law.

The following day the Times devoted five columns and a Leader to a report of the Demonstration in Manchester at which an estimated 230,000 people were present. Further Chartist

demonstrations were reported on the 27th and 28th. Harriet Martineau and Carlyle had founded their reputations on their powers of social analysis: it is inconceivable that Chartism was not a subject of conversation between the friends. It was perhaps in the course of such a conversation that Darwin, in a state of heightened perception, asked Erasmus to lend him his copy of the Essay on Population.³⁵

4) The Role of Malthus in the Development of Darwin's Thought

The basic premises of Malthus's argument could have come as no surprise to Darwin when he read the Essay in September 1838. Malthusian population theory was an important component of the conceptual framework within which he had sorted and analysed the experiences of his travels. Just as the innumerable bits of information received by him about the natural world could be given some coherence by the uniformitarian framework he adopted from Lyell, grafted on to Paley's explanation of adaptation, so his observation of societies so different from anything previously experienced by him, could be intelligibly interpreted on the assumptions of classical political economy and Malthusian theory. On his return home he found himself among companions who, though disputing the implications of this conventional framework, were content that social and political philosophy should be debated within it. He was predisposed to be sympathetic to Malthus and he was convinced that analogies drawn between the

natural world and man were valid. The question then presents itself of whether Darwin found in Malthus merely corroboration for ideas already constructed or whether he gained from the Essay any new insights.

Undoubtedly Darwin must have been struck by the degree of accord between his own observations and those of Malthus. The early chapters of the Essay on the Principle of Population describe savage life. Malthus's comment that "The wretched inhabitants of Tierra del Fuego have been placed, by the general consent of voyagers, at the bottom of the scale of human beings", must have recalled the memory of Darwin's own horror on first visiting that area: "I feel quite a disgust at the very sound of the voices of these miserable savages", he had written to his sister Caroline. Malthus's description included accounts of cannibalism, infanticide, disease and degradation: it was the witnessing of such that had led Darwin to reject the idea of a qualitative difference between man and brute. In Malthus, too, Darwin read of cases where competition for scarce resources led to the extermination of whole populations:

an accession of strength to one tribe opens to it new sources of subsistence in the comparative weakness of its adversaries; and, on the contrary, a diminution of its numbers, subjects them to extirpation or famine from the irruptions of their stronger neighbours.

Darwin witnessed in Patagonia the irruption of General

Rosas's army: he had the first-hand knowledge to understand precisely the implications and the force of Malthus's arguments.³⁴

A fine example of Malthus's use of dramatic imagery to compel an understanding of the sheer force of population pressure is to be found in the opening pages of Book I:

The germs of existence contained in this earth, if they could freely develop themselves, would fill millions of worlds in the course of a few thousand years. Necessity, that imperious, all pervading law of nature, restrains them within the prescribed bounds.

That Darwin was struck by the power of such evocative language is readily apparent from the record of his reading of the Essay in the D notebook:

Even the energetic language of Decandolle does not convey the warring of the species as inference from Malthus....Population is increased at geometrical ratio in FAR SHORTER time than 25 years - yet until the one sentence of Malthus no one clearly perceived the great check amongst men....One may say there is a force like a hundred thousand wedges trying to force every kind of adapted structure into the gaps in the economy of nature or rather forming gaps by thrusting out weaker ones.

Malthus undoubtedly had corroborative value for Darwin, but some have suggested that this is the limit of his debt: indeed Howard Gruber has asserted that Malthus could not even have had this limited value, had the details of Darwin's theory of natural selection not already reached an advanced stage of synthesis. Malthus's relevance, however, was as much to the philosophical acceptability of the theory as it was to the details of its mechanism. Malthus endorsed the idea of a God who worked through and was limited by the ordinance of universal laws, an idea that was essential to the

accommodation, important to Darwin at this time, of deism to transmutation.³⁷

A major difficulty for Darwin was the reconciliation of his observations and deductions with the assumption of an all-caring, benevolent God that both Unitarian tradition and the complacency of Paleyan theology had led him to expect. In the M notebook the frequent references to happiness, its nature, the different ways in which it is to be obtained, and more especially the extent to which it is the object of life, demonstrate his preoccupation with the subject. Carlyle challenged the idea that the existence of God implied a "happy" organisation of the world:

What Act of Legislature was there that *thou* shouldst be Happy? A little while ago thou hadst no right to *be* at all. What if thou wert born and predestined not to be Happy, but to be Unhappy! Art thou nothing other than a Vulture, then, that fliest through the Universe seeking after somewhat to *eat*; and shrieking dolefully because carrion enough is not given thee? Close thy *Eyron*; open thy *Goethe*.

But though Carlyle attributed the expectation of happiness to the arrogance of man, he could not adduce an explanation of suffering. This was precisely what Malthus could supply, for suffering was an integral part of the mechanism by which God's purposes would be realized.³⁸

Malthus, like Carlyle, insisted that happiness had to be t
earned and he described the means by which mankind could
maximise his potential for happiness. In N 10-11 Darwin

referred to "Bk IV Chapter I on passions of mankind, as being really useful to them". It was in this chapter that Malthus described how passion, when tempered by moral restraint maximises human happiness: "the passion between the sexes has the most powerful tendency to soften and meliorate the human character, and keep it more alive to all the kindlier emotions of benevolence and pity." Sexual passion cannot be diminished without diminishing the sum of human happiness. Instead it must be regulated by the observance of moral restraint. Furthermore,

The Christian cannot consider the difficulty of moral restraint as any argument against its being his duty;... though no duties are enjoined which do not contribute to his happiness on earth as well as in a future state, yet an undeviating obedience is never represented as an easy task.³⁷

For Malthus the law of population had two great purposes: firstly, it provided the means by which the earth was peopled, as men, seeking to escape the evils of overpopulation, moved to new territories:

We cannot but conceive that it is an object of the Creator, that the earth should be replenished; and it appears to me clear, that this could not be effected without a tendency in population to increase faster than food; and as, with the present law of increase the peopling of the earth does not proceed very rapidly, we have undoubtedly some reason to believe, that this law is not too powerful for its apparent object.

For Darwin superfecundity when coupled with adaptive change would cause the earth to be replenished, not merely with people, but with every conceivable variety of organic life.⁴⁰

The second great purpose of the Law of Population was to provide an incentive to mankind to overcome his natural indolence: through industry and through the adoption of moral restraint man could improve his life on earth whilst at the same time fitting himself, by virtue of the moral superiority required for the observation of restraint, for the life hereafter. Malthus's theodicy was given its most concise expression in the first Essay, but was discussed at length in Book IV of the 6th edition. In the words of the first Essay ,

Evil exists in the world not to create despair, but activity. We are not patiently to submit to it, but to exert ourselves to avoid it. It is not only the interest, but the duty of every individual, to use his utmost efforts to remove evil from himself, and from as large a circle as he can influence; and the more he exercises himself in the duty, the more wisely he directs his efforts and the more successful these efforts are, the more he will probably improve and exalt his own mind, and the more completely does he appear to fulfill the will of his Creator.

Malthus confined himself to man, but by analogy Darwin could secularise this into a philosophical justification for the seemingly cruel side of the theory of natural selection: without population pressure there would be no mechanism for exploiting those gaps in the economy of nature and organic life on this planet could not reach its potential. That Darwin did make this connection between Malthus's theodicy and his own theory is clear from his comments on the Essay in the D notebook:

(The final cause of all this wedging, must be to sort out proper structure, and adapt it to change. - to do that for form, which Malthus shows is the final effect (by means however of volition) of this populousness on the energy of man)".⁴¹

For Malthus the law of population was essential to God's purpose and from its operation there could be allowed no escape. Indeed his opposition to contraception was founded on the conviction that it would frustrate God's intention: "I should always particularly reprobate any artificial or unnatural modes of checking population," he wrote in the Appendix to the 1817 edition of the Essay, "both on account of their immorality and their tendency to remove a necessary stimulus to industry." Darwin echoed this view of the moral necessity of struggle in the closing pages of Descent of Man:

Man, like every other animal, has no doubt advanced to his present high condition through a struggle for existence consequent on his rapid multiplication; and if he is to advance still higher, it is to be feared that he must remain subject to a severe struggle. Otherwise he would sink into indolence, and the more gifted men would not be more successful in the battle of life than the less gifted. Hence our natural rate of increase, though leading to many and obvious evils, must not be greatly diminished by any means.

Although man must remain subject to struggle, Malthus offered the means to mitigate the worst effects thereof: men should be provided with the education that would enable him to understand the functioning of society and should be encouraged, through policies of embourgeoisement, (including the abolition of the poor laws and an improved standard of living for the labouring classes), to adopt the policy of moral restraint. Anyone who then refused to acknowledge the authority of natural law could expect no help: "He should be taught to know that the laws of nature, which are the laws of

God, had doomed him and his family to suffer for disobeying their repeated admonition." It was a similar belief, that man's best hope came from understanding, and falling in with natural law, rather than in vainly combatting it, that motivated Harriet Martineau to write her Illustrations of Political Economy.⁴²

Malthus's emphasis on the imperfection implicit in a law-governed universe contradicted the conventional concept of perfect adaptation. Paleyan natural theology had led Darwin to expect all organisms to be perfectly adapted to their environment and he had been much exercised to account for the apparent exceptions to this. The use of Malthusian theory as an analogy for events in the natural world provided a solution to the problem of imperfect adaptation, for perfect adaptation would deny the operation of Malthusian law. Although Ospovat maintained that Darwin did not adopt the notion of relative adaptation for some months after his reading of Malthus, that reading would seem to have been a crucial stage in Darwin's jettisoning of his earlier dependence on Paleyan perfect adaptation.⁴³

Just as governance by law implied imperfect adaptation on the level of the individual organism, so too did it imply imperfection on a more general level. Darwin had been appalled by the waste and destruction that he had witnessed on his voyage. In September 1832 he had written of Baia

Blanca, "death appeared to reign over all other animals. I never saw any place before so entirely destitute of living creatures." Three months later in Tierra del Fuego "The number of decaying and fallen trees reminded me of the Tropical Forest. But in this still solitude, death, instead of life, is the predominant spirit." Darwin was disturbed too by the existence of organisms that were useless, harmful, ugly: how could these form part of God's plan? Malthus's vision suggested that imperfection was to be expected as a consequence of God's decision to work through secondary laws. The law of population inevitably brought in its wake destruction and waste, and although man had some hope of avoiding such evils through the employment of the preventive check of moral restraint, the rest of the economy of nature was necessarily at the mercy of the harsher checks of vice and misery.⁴⁴

Eventually this designation of destruction as a by-product of divinely-inspired law proved unsatisfactory to Darwin: the notion of happiness, which had preoccupied Darwin in the months preceding the reading of Malthus, continued afterwards to have a strong hold upon him. In his Autobiography he wrote that

A being so powerful and so full of knowledge as a God who could create the universe, is to our finite minds omnipotent and omniscient, and it revolts our understanding to suppose that his benevolence is not unbounded, for what advantage can there be in the sufferings of millions of the lower animals throughout almost endless time?

Malthus, unaffected by the Unitarian commitment to a benevolent deity, was less troubled by the existence of evil and suffering:

Natural and moral evil seem to be the instruments employed by the Deity in admonishing us to avoid any mode of conduct which is not suited to our being, and will consequently injure our happiness.

For the present Malthus's argument was convincing to Darwin: it absolved God of responsibility for suffering, showed how a measure of happiness could be obtained and proposed a justification for the existence of evil.⁴⁵

5) Summary

In the years between the passage of the Poor Law Amendment Act, 1834 and 1876, when Darwin wrote the major part of his Autobiography, the reputation of Malthus declined. The continued rise in population, together with unparalleled prosperity that had set in in the 1850s, appeared to confound the Law of Population, whilst improvements in agricultural productivity made his projection of potential food supplies seem unduly pessimistic. In the same period, the move to professionalise science, to divorce it from metaphysical questions and to promote its practitioners as men dealing with natural data in a wholly objective way, had made great advances, and Darwin identified himself with this movement. By 1876 the crediting of Malthus as a major influence on the development of his theory would neither enhance the acceptability of that theory, nor fit in with the new scientific approach; there seems to be no plausible

explanation for such accrediting except on the supposition that the importance of Malthus to Darwin was as real as he suggested.

Darwin approached Malthus in September 1838 anticipating social attitudes in harmony with his own and believing in the inter-changeability of social and biological metaphors. A generation earlier Malthus, equally convinced of the unity of truth, had employed the analogy of the natural world to support *his* theory. Darwin's familiarity with Malthusian concepts, together with the ready transposition of biological and social metaphor accounts for the corroborative value of Malthus. The parallels Darwin could draw between his speculation and Malthus's largely uncontroverted law, together with Malthus's compelling imagery and his designation of superfecundity as a force of limitless power, crystallised Darwin's faith in the mechanism he was developing. His own perceptions, at variance with traditional concepts of balance and harmony were all at once legitimised: "(I do not doubt every one till he thinks deeply has assumed that increase of animals exactly proportionate to the number that can live -)". But, quite as important to Darwin in the autumn of 1838, was the philosophical unity that his reading of Malthus conferred upon his speculation.⁴⁶

It is an understanding of this philosophical unity, and its importance to Darwin, that is perhaps the most important

product of studying Darwin in the context of the contemporary intellectuals who were his friends. The Erasmus circle were united in their view of the world as a coherent, law-bound system; the universal laws which governed that system were expected to account for all phenomena, from the existence of poverty and suffering to that of waste and struggle throughout the organic world. Carlyle was prepared to dispense with happiness and to speak in Malthusian terms of the necessity for struggle to overcome man's indolence; Harriet Martineau, committed to the concept of a benign universe, interpreted Malthus as showing the way for improvement through struggle and her perfectibilism allowed her to minimise the hardship implicit in Malthus's theodicy. The personal acquaintance of the Wedgwoods and Harriet Martineau with Malthus, and the consonance of his social prescriptions with theirs and with those of the Darwin brothers ensured that in their company his works would not suffer the vilification to which they were treated from the Tory and popular radical press. Once more revealing his powers of synthesis, Darwin interpreted the Essay on the Principle of Population, in the light of his own experiences and in the context of debates with his friends, to arrive at conclusions that made sense of the results of his speculative work and enabled him to set aside the philosophical anxiety which had preoccupied him in the preceding months.

What Malthus provided, and what Darwin had been searching for, was a cosmology: population theory explained

the peopling of the earth by means of superfecundity. Its corollary was struggle and struggle made possible improvement. God had ordained one law by which his Creation would multiply and would at the same time improve. Improvement would be made at the expense of the suffering of a large part of creation, but the suffering was justified by the improvement. By analogy transmutation by natural selection explained the development of life on earth and was intelligible as a metaphysical system. Waste and destruction, sin and evil were the necessary by-products of a universe governed by law and could be accommodated within a theistic framework. Darwin's system in the light of Malthus not only explained the scope, the scale and the character of life on earth, but also supplied its own theodicy, and expectation of future development. The philosophical unity conferred on Darwin's theory by his understanding of Malthus explained his excited response in the autumn of 1838 and his enduring gratitude to and respect for the much-maligned political economist.

NOTES TO CHAPTER 6

- 1 Shapin, 1982, p. 178; De Beer, 1969, pp. 32-5, and 1963, p. 100; the excised pages from the D Notebook were published by De Beer et al, eds., 1967. Darwin refers to Malthus in the Origin, p. 68, and the Autobiography, p. 71 and see Darwin to A. R. Wallace, 6 April 1859, Calendar, 2449, and Darwin to Ernst Haeckel, 8 October 1864, Calendar, 4631. Darwin read Malthus in the last week of September, not in October as written in the Autobiography.
- 2 Oldroyd, 1984; Schweber, 1977 and 1985, Ruse, 1979, p. 175; see also Hodge, 1972, p. 16, cf. Pancaldi, 1985, p. 262 who credits the high prestige of political economy in Britain.
- 3 Herbert, 1971 and 1977, p. 216; Bowler, 1976. On Darwin's use of the term "struggle" see Manier, 1978, pp. 177-181 and Hodge and Kohn, 1985, p. 195.
- 4 Ospovat, 1981, p. 71; Gruber, 1981, pp. 162-3; Manier, 1978, p. 79.
- 5 Kohn, 1980, p. 148; Hodge and Kohn, 1985, p. 186.
- 6 Young, 1972, p. 203; Young, 1985a, pp. 23-55; Young, 1985b, p. 611.
- 7 Oldroyd, 1984, pp. 346-7, 358. For an extreme example of Malthus as tyrant see Chase, 1975; Boner, 1955, is in the same tradition, although less vitriolic and more scholarly. Kohn, 1980, p. 145 suggests that the source

of Malthus's impact was his opposition to the concept of harmony that was widely accepted among Darwin's contemporaries, the fact that he was speaking with "the voice of another age". This underestimates the degree of doubt about harmony in nature in the 1830s, and the degree to which Malthus's writing had kept abreast of the times: he was not ossified in 1798, but struck a chord with many of Darwin's contemporaries. It was the similarities in their attitudes that enabled Darwin to make so much of his reading of the Essay.

- 8 Malthus, Essay on the Principle of Population, 2nd ed., quoted in Meek, ed., 1953, p. 15. Roy Porter, urging the importance of reading the whole of Malthus's works, writes that "in his later years, Malthus developed an absorbing vision of the possibility for human society not being *limited* by the laws of nature but rather being *shaped* by mankind's own capacity to learn and adapt (a view interestingly prophetic of Darwin's own sense of social and cultural evolution)." (Porter, 1987, p. 216).
- 9 The standard biography of Malthus is Bonar, 1885; two recent biographies are James, 1979, and Petersen, 1979.
- 10 Malthus, 1960, I, 142, 82. Page references to the Essay on the Principle of Population are to the 7th edition, reprinted in 1960. The 7th edition was itself a reprint of the 6th, which was the edition read by Darwin. In the notebook entries, Q 177 and Q 69, Darwin, like Malthus, portrayed himself as exponent and prover

- rather than as discoverer.
- 11 Townsend quoted in Poynter, 1969, p. 42. For the background to the debate about poverty see Inglis, 1971, pp. 15-58 and Poynter, 1969, chapters 1-4.
 - 12 Malthus, 1960, II, 64, 37; Inglis, 1971, p. 331; Poynter, 1969, p. 325.
 - 13 Malthus, 1960, II, 261. Senior dissociated himself from Malthusian theory in 1828 (Beales, 1953, pp. 6-7).
 - 14 Malthus, 1960, II, 111-125, 90; Petersen, 1979, p. 172; Malthus, 1960, I, 58.
 - 15 Malthus, 1960, II, 174.
 - 16 Malthus, 1960, II, 210-213, 194; Malthus, "Letter to Samuel Whitbread", 1807, in Glass, ed., 1953; Malthus, 1960, II, 53, 250.
 - 17 Malthus's first Corn Law pamphlet of 1814 is quoted by James, 1979, p. 253; Bessie Wedgwood to Emma Allen, 16 January 1827, Emma Darwin, I, 189. On Malthus's postponed nuptials see James, 1979, pp. 100-102: Malthus himself recognised that late marriage was already a canon of middle class conduct (Malthus, 1960, II, 236). On the opposition to Malthus in the early-nineteenth century see Boner, 1955.
 - 18 Barlow, ed., 1933, pp. 198, 379, 136; Malthus, 1960, II, 23-28.
 - 19 Manier, 1978, p. 84. Malthus, 1960, II, 261, cf. N 47 and Darwin to A. Hyatt, 4 December 1872, ML, I, 344. LeMahieu, 1979, supports the view that Malthus's ethics

- implied a rejection of stasis, and Gale, 1972, that Malthus's moderate acceptance of the concept of progress was important in making the Essay accessible to Darwin; Young, 1985b, pp. 613-4 contrasts Paleyan stasis with Malthus's provision for upward social mobility; see also Santurri, 1982, p. 330.
- 20 Keegan and Gruber, 1983, p. 20.
- 21 Paley, 1970, pp. 539-41, 554-5: in his later editions Malthus dissociated himself from Paley's more complacent conclusions. He rejected for example Paley's defence of extreme differentials between rich and poor, on the grounds that prudence was best encouraged by a wide diffusion of prosperity in the population (Malthus, 1960, II, 253.
- 22 On Mackintosh and Malthus see Boner, 1955, p. 26, James, 1979, p. 322; Empson's recollection is in Bonar, 1966, p. 423; Fanny Wedgwood to Frank Wedgwood, 11 January 1832, Emma Darwin, 1904, I, 335. Darwin refers to a visit by Fanny and Hensleigh to the Malthus ladies in a letter to Susan Darwin, 22 February 1842, Correspondence, 2, 312.
- 23 Caroline Darwin to Darwin, 28 October 1833, Correspondence, 1, 345; the extract from "Weal and Woe in Garveloch" is in Boner, 1955, pp. 120-121.
- 24 Martineau, 1983, I, 205-9; Martineau, 1833, Preface.
- 25 Martineau, 1833, pp. 9, 113.

- 26 Martineau, 1983, I, 269-70; Hunt quoted in Boner, 1955, p. 135.
- 27 Martineau, 1983, I, 328-9, 209-211.
- 28 Vorzimmer, 1977. Carlyle, Chartism, p. 14, and see Sartor Resartus, p. 74.
- 29 Carlyle, Sartor Resartus, pp. 139, 141.
- 30 Carlyle, Chartism, pp. 12, 13, 21, 65, 67.
- 31 Carlyle, Past and Present, pp. 185, 276-7; Chartism, p. 20.
- 32 James, 1979, p. 112; Malthus, 1970, p. 124 and 1960, p. 6.
- 33 James, 1979, p. 443; Pancaldi, 1985, p. 262.
- 34 Autobiography, p. 71; Darwin to Lyell, 14 September 1838, Correspondence, 2, 107; M 70, 72-3, 75-6, 81. On why Darwin read Malthus, see Herbert, 1977, p. 216 and Schweber, 1977.
- 35 Goodway, 1982, p. 22.
- 36 Malthus, 1960, I, 20; Darwin to Caroline Darwin, March-April 1833, Correspondence, 1, 304; M 153e; Malthus, 1960, I, 36; Barlow, ed., 1933, pp. 171-3. Hodge and Kohn, 1985, p. 195 point out that Darwin had already employed analogies between conquests by humans and those by other colonising species, as had Lyell before him: he was well prepared to draw the same analogy when reading Malthus.
- 37 Malthus, 1960, I, 6; D 134e-135e. Gruber, 1981, p. 119.

- 38 M 121, 109, 117, 124-5, N 47, 89; Carlyle, Sartor
Resartus, p. 116.
- 39 Malthus, 1960, II, 155, 164.
- 40 Malthus, 1960, II, p. 157 and see the concluding passage
of the Origin, pp. 459-60.
- 41 Malthus, 1960, II, 164; Malthus, 1970, p. 217; Q 135e.
On the relationship between Darwin's theory and
Malthusian theodicy see especially Moore, 1979, pp. 313-
4 and Ospovat, 1981, pp. 66-7.
- 42 Malthus quoted in Petersen, 1979, p. 192, cf. Descent p.
945; Malthus, 1960, II, 202; Martineau, 1983, I, 171.
With very few exceptions, such as James Mill (Boner,
1955, p. 98), Bentham and Marie Stopes (Petersen, 1979,
pp. 194-205), advocacy of birth control was in the
early-nineteenth century confined to radical
freethinkers like Richard Carlile.
- 43 Ospovat, 1981, p. 61.
- 44 Barlow, ed., 1933, p. 99, 121, 262; Malthus, 1960, I,
12.
- 45 Autobiography, p. 52, cf. Malthus, 1960, II, 151.
- 46 Q 134e.

THE MAKING OF A THEORIST

The setting of Darwin's speculative activity in the context of the climate of intellectual challenge fostered by his London companions in the 1830s helps to resolve some of the traditional problems of Darwin historiography. His pursuit of a hypothesis to explain transmutation, which could not advance his professional ambitions, becomes more understandable when he is seen mixing with people intent on revising existing ideology to meet the requirements of a rapidly changing society. Their common interest in the quest for answers to the problems of evil, of struggle, and of the possibility of improvement, ensured that their company provided an important stimulus to his own speculative activity. The paradox of his iconoclastic evolutionary thinking and social conservatism is put in perspective by an appreciation of the adaptability of Darwin's personality: on the Beagle an adventurer, in London an intellectual radical, in Down the father of the parish. The portrayal of Malthus not as a relic of the past but as a prophet of the new middle class intellectual hegemony casts new light on the issue of the Malthusian insight. The interaction between Darwin's species speculation and his religious ideas is clarified by an awareness of the immensely broad range of opinion that laid claim in the 1830s to the umbrella of Christianity.

In the process of this study it has become clear that certain aspects of Darwin's cultural environment need to be explored in further detail. The Unitarian connection has not gone unnoticed by Darwin scholars, but its impact warrants closer examination. Unitarianism was a shared heritage not only of the Darwins and Wedgwoods, but of Harriet Martineau and Lyell too. It has been suggested here that the influence of Joseph Priestley is to be seen in Darwin's accommodation of materialism: this claim needs to be tested by a more detailed study of the permeation of Priestleyan metaphysics within Unitarianism. Further investigation is needed too of the parallel suggested here, between Darwin's experiences of savage life in South America and the observation by his liberal middle class contemporaries in England of the degrading conditions of life suffered by the growing industrial working classes. In this context, the analogy then drawn between wage and chattel slavery is of especial interest.¹

Perhaps the most important result of this study is to draw attention to the centrality of philosophical issues in Darwin's species speculation in the years 1837-9. It has been shown that Darwin's adoption of the concept of transmutation was motivated as much by its resolution of his personal philosophical difficulties as by its satisfaction of purely empirical anomalies. Having adopted an evolutionary perspective he set himself the task of fashioning an

explanatory mechanism, and in this task he used every heuristic device at his disposal, from the records of pigeon fanciers to the law of population, from geology and zoology to the Bridgwater Treatises. Darwin was engaged in a search for a theory to support a theory.

1) The Primacy of Darwin's Commitment to Evolution

Since the transcription and publication of the Red Notebook by Sandra Herbert, the timing of Darwin's conversion to transmutation has been located in the spring of 1837, before the opening of his series of species notebooks. During the next 18 months, having concluded that variations permitted by a life cycle dependent on sexual reproduction were the means by which change was effected, he worked on several theories before committing himself to natural selection. His subsequent willingness to qualify its scope in the face of critics in the 1860s is testimony to his primary desire to win converts to the concept of transmutation rather than insisting on a strict loyalty to the mechanism of natural selection. On the 11th May 1863 he wrote to Asa Gray, "Personally, of course, I care much about Natural Selection; but that seems to me utterly unimportant compared to the question of Creation or Modification." And in a letter to Joseph Hooker in 1868 he dismissed as unimportant the charge made in the Athenaeum that belief in Natural Selection was passing away, asserting that belief in common descent, now almost universally accepted, was more important and was

directly attributable to the Origin of Species.²

In his contribution to The Darwinian Heritage, Silvan S. Schweber asserted that "from 1839 on, Darwin never wavered from the view that natural selection was a law of nature having universal applicability in the organic world in the same sense as Newton's laws of motion and of gravity". But Darwin's jealous and rigorous defence of natural selection as an all-sufficient causative agent must be interpreted in the context of his belief that the acceptance of transformism by the scientific community depended on his mechanism being considered worthy of the status of a Newtonian law. Monocausality was a requirement of scientific explanation, so evolution must stand or fall by natural selection, other agents of variation being relegated to a subsidiary status.³

The overriding importance for Darwin of evolution is revealed in his later books, where the defence of natural selection is subordinated to the argument of the superiority of the transmutationist over the Creationist model. In Darwin's "Big Book" is evidence of his personal commitment to multicausality:

...many organic beings by slowly extending their range, can become acclimatised. Whether the acclimatisation is effected by mere habit, or by the natural selection of individuals born with a constitution, fitted either to greater heat or cold, it is impossible to say: probably both actions concur.

With regard to the question of blindness in cave-dwelling

organisms, he wrote "as the existence of useless eyes could hardly be injurious to those animals, I should attribute their blindness to simple disuse", and in connection with bees, points of structure were lost "either through disuse, or through natural selection, or both combined." Darwin reaffirmed his pluralist commitment in his chapter entitled Difficulties on the Theory, providing examples of the way that useful adaptations could be erroneously attributed to natural selection,

Seeing how absolutely necessary whiteness is in the snow-covered Arctic regions to the prey-siezers and the preyed, we might attribute the absence of colour to a long course of selection; but it may be that whiteness is the direct effect of intense cold; and that the struggle for life has only so far come into play that coloured animals would in the arctic regions live under a great disadvantage.

Dov Ospovat drew attention to the primacy of transmutation when discussing Darwin's division of the Sketch, the Essay and the "Big Book" into two parts, the first presenting the theory of natural selection, the second elaborating the evidence in favour of transmutation:

from 1838 until at least the mid-1860's, when the idea of descent gained fairly wide acceptance, Part II was for Darwin in a fundamental sense the more important part of his work. Darwin was fond of the theory of natural selection, but his greatest concern was to establish the doctrine of descent."⁴

The strength of Darwin's commitment to the doctrine of descent raises two important questions. Firstly what motivated Darwin's conversion? Secondly, what were the

implications of prior conversion for the search for an evolutionary mechanism? With regard to the first question, it is generally agreed that Darwin did not become a convert until the adoption of the hypothesis became legitimised in his eyes by the judgements on his specimens made by specialists like John Gould and Richard Owen. But it has also been stressed that the "scientific" results of the voyage, accommodated by the experts within orthodox explanations, did not of themselves justify conversion. This has forced attention on the experiences Darwin went through during the Beagle years for an understanding of the development of a willingness to accept evolution. The publication of the first volume of the Correspondence has made this task significantly more realizable. For if earlier editions of his letters had underlined the important developments in Darwin's zoological and geological understanding, this comprehensive edition of his letters throws into relief the tremendous emotional and intellectual impact of many of his "human" experiences. The genocide committed by General Rosas, the cruelty of the slaveowners, and above all, the degeneracy of the savage, these were the experiences that demanded major changes in Darwin's philosophy of nature and of man.⁵

The traumatic nature of Darwin's visits to Tierra del Fuego is worth stressing again. The horror he felt was still recalled some four decades later:

He who has seen a savage in his native land will not feel much shame, if forced to acknowledge that the blood of some more humble creature flows in his veins. For my own part I would as soon be descended from that heroic little monkey, who braved his dreaded enemy in order to save the life of his keeper, or from that old baboon, who, descending from the mountains, carried away in triumph his young comrade from a crowd of astonished dogs - as from a savage who delights to torture his enemies, offers up bloody sacrifices, practises infanticide without remorse, treats his wives like slaves, knows no decency, and is haunted by the grossest superstitions.

In trying to understand the meaning this experience had for Darwin it must be placed in the context of the unusually sheltered life he had led before the voyage. Growing up in a financially prosperous and socially respected family, in a stable and but slowly changing part of provincial England, the only preparation he had for such a contrasting portrait of the human condition came through the written word of other travellers. The emotional shock of Tierra del Fuego was therefore untempered by any prior first-hand acquaintance with the harsher side of life.⁴

Given his extreme reaction to the experience of savage life the orthodox explanations that he brought with him offered little comfort. The idea that savages, or for that matter the enslavement of the Negro race, were to be explained by the Fall, offended against Darwin's Unitarian belief in the Fatherhood of God, just as much as did the doctrine of eternal punishment which he came to reject for the same reason. Darwin's Beagle experiences left him with the need to find a philosophical construct that would

satisfactorily explain the gulf that existed between the Englishman and the savage, and would free God from responsibility for the examples he had witnessed of man's inhumanity to man. Acquainted already with the concept of transmutation expressed as a philosophical system, through the writings of his grandfather Erasmus Darwin, and as a hypothesis in natural history through his Edinburgh mentor Robert Grant, and the exposition on Lamarck in Lyell's Principles, the coincidence of his philosophical and emotional requirements with the evidentiary potential of his findings in natural history proved an irresistible combination."

Darwin converted to transformism, in the absence of an explanatory theory, because evolution could account for his scientific data whilst making sense of his Beagle experiences. Evolution within a species explained the gulf between the Fuegian and the English traveller, and removed God's moral responsibility for the baseness of primitive man by attributing this state to the operation of natural law. By assigning God the limited role of lawmaker, he could be excused "the sufferings of millions of lower animals throughout almost endless time". In the course of the next two years the inhumanity of General Rosas's Indian wars and of the institution of slavery were explained by invoking competitive struggle prompted by population pressure as the mechanism by which evolution occurred. The implications for

his moral outlook are demonstrated by Ralph Colp's study of Darwin's attitude to the American Civil War. Against a tradition through three generations of opposition to slavery and his own publicised disgust at the institution in the Journal of Researches, Darwin contemplated support for the South for fear of an overpowerful United States. While Darwin subsequently joined in the enthusiasm for the Northern victory, his earlier willingness to allow the absolute moral imperative of abolition to be subordinated to political concerns is striking testimony of the extent to which his acceptance of the inevitability of suffering palliated his sensitivity.⁶⁹

The precedence of Darwin's conversion had important implications for his search for a supporting hypothesis. Firstly, a Darwinian theory had to resolve the problems which drove him to evolution in the first place. Thus it must embrace man, since for Darwin man was the major problem. Secondly, in the context of the 1830s it must leave room for a deity or lawmaker. Thirdly, because of Darwin's Newtonian self-image, it had to satisfy his own professional criteria: it must present a law of universal application. But in order to win the approval of his colleagues, it needed to be malleable to the extent that it could meet different and sometimes contradictory demands. Thus, so that his theory should be capable of explaining all organic phenomena, he brought into play other agents of change to supplement

natural selection. But because his scientific colleagues demanded monocausality as a criterion of legitimate hypothesis, he attempted to submit them to the supervening test of natural selection. The logic of Darwin's argument in this case has been widely accepted: Keegan and Gruber considered "Darwin's supposed Lamarckism" and concluded that "The role of habit is not identical in Darwin's and Jean Baptiste Lamarck's theories. In both theories, some acquired characteristics can be passed to offspring. But in Darwin's mature theory, for progressive evolution to ensue these traits must still be subjected to natural selection....Only those habits that were adaptive would be preserved by natural selection..." But it is difficult to imagine in what circumstances environmentally determined habits might be non-adaptive."

Such ambiguities, however, arose from Darwin's problems of presentation, and affected publication of the mature theory to a greater extent than they affected the content of the theory as expressed in the Sketch of 1842. In 1837 Darwin's concern was to discover a theory that explained man's place in nature within a system of universal laws decreed by God. In just such a metaphysical quest were his London companions engaged and the focus on them highlights the relationship between Darwin's theory of evolution by natural selection and the cultural preoccupations of the early-Victorian era.

2) Darwin in Context

The role of the Erasmus circle was social as well as substantive, enabling Darwin to contain the anxieties aroused in him by the knowledge that his ideas would antagonise the colleagues in natural history whose esteem he so desired. Although it seems questionable that Darwin himself felt any remorse or doubt about his materialistic outlook, he was justly afraid of its reception by others. However within the confines of the Erasmus circle and the wider group of liberal intellectuals with which it was connected, Darwin found encouragement and support for his philosophical revision; he could relegate his fears to the background and pursue with enthusiasm and evident pleasure his intellectual radicalism. By the time he left London his speculative work, in terms of its radical philosophical implications was done, and the sanctuary of Down provided the shelter he needed for the process of proving his theories.

In the spring of 1837 Darwin needed intellectual assistance. He founded his speculation upon the assumption of continuity between man and the rest of organic creation and this implied materialism. Darwin needed a formula that was materialist but that avoided the disreputable social and political implications associated with materialism that could be seen in the career of his one-time friend and teacher, Robert Grant, now heavily involved in the popular radicalism of London's medical schools. Here, Harriet Martineau was on

hand with her understanding of Priestleyan materialism, in which matter itself was suffused with spirit. The dualism of Hensleigh could be avoided, but without the atheistic implications of reductionist materialism. Nor was Priestley the only alternative: both Erasmus and Carlyle were competent to expound on ways in which a materialistic account of organic life could take on a more spiritual guise through adaptations of German idealism. Additionally, Carlyle's insistence on the impossibility of understanding God's purpose sanctioned Darwin's attempt to form a comprehensive theory without reference to the question of ultimate origins.¹⁰

The search for an explanation of suffering that comprehended a benign deity was one in which Darwin's companions were equally as involved as himself. It was after all an old problem. For Malthus it had acquired a special urgency by virtue of the perceived population explosion of the late-eighteenth century, for Harriet Martineau because of the personal experience of the vagaries of fortune in industrialising England and for Darwin as a result of his travel experiences. Malthus's answer was that suffering occurred so that through striving man was lifted out of his natural indolence and enabled to realise his potential, and, by extension, the potential of his species. If that answer at times seemed inadequate then Darwin could attend to Carlyle's injunction of the futility of man's attempting to understand

divine will, an injunction which found echoes in Comte, a review of whose work Darwin had read with such interest in August 1838.¹¹

The need to find a law of universal application dictated a multi-disciplinarity that included not only the various branches of natural history but all other areas of human learning as well. Philosophy, psychology, history and economics, all were grist to Darwin's mill. And although his self-identification as a geologist led him to become involved with the Geological Society, enhancing his reputation among his peers, his financial independence, his friendship with the cosmopolitan Lyell and his involvement with Erasmus and his companions allowed him to stand aloof from the professional jealousies that could so easily obstruct synthetic thought. Erasmus and friends, providing an environment of intellectual toleration that allowed for wide diversity within agreed limits, complemented Darwin's catholic reading programme. They presented him with a range of ideas from Martineau's determinism to the spirituality of Hensleigh and Darwin's eclecticism led to such contrasting ideas being brought together in the Origin. Darwin in this way conferred upon the Origin a plasticity that granted it a much wider audience than a more rigorous exposition would have allowed. But it was not simply the publication that was affected. The same conditions protected Darwin from the blinkering effects of a commitment to monocausality; he

consciously avoided a particularisation of the roles of the different agents of organic change, as much as he avoided a reconciliation of the romantic-materialist dichotomy that developed from his superimposing the influence of Malthus and Hume upon that of Wordsworth and Milton. In this way he satisfied his need for a law of universal application at a time when he was unable to explain all phenomena by reference to natural selection alone.¹²²

Darwin needed to be able to distinguish his ideas from those of the radical freethinkers with whom they were usually associated and the political and social respectability of Darwin's companions was important in this respect. His friends were some of the most advanced thinkers of his day, but they were characterised by an acceptance of the post-Reform Act establishment. Carlyle could attack the government with impunity, and explain and defend the rise of Chartism, without his basic allegiance to the present ordering of society being questioned. Hensleigh resigned his job on a question of conscience without incurring disrespect: rather the contrary, indeed, since he used only long-accepted channels of protest, the petition and personal persuasion of those in positions of influence. Darwin's friends could adopt heterodox religious views without their heterodoxy being considered symptomatic of social or political untrustworthiness. The limited, deistic Unitarianism of Harriet and the highly spiritual liberal Anglican faith of

Hensleigh were alike characteristic of a personal attitude to religion that was not considered subversive. Great as the differences were between Carlyle and Harriet and between Harriet and Hensleigh, there was a more profound underlying consensus and in this consensus Darwin shared. It did not in this period challenge the established order, which had shown itself willing to adapt by its passing of the Reform Act. But it did consciously separate itself from popular radicalism, resulting in the marginalisation of Robert Owen, for example and explaining the almost complete absence of contact between Darwin and his former friend and teacher Robert Grant.¹³

The need to distance themselves from popular radicalism did impose a form of unconscious censorship upon the thought of liberal intellectuals in this period, and in Darwin's case this is evident in his treatment of Lamarck. Burckhardt has drawn attention to Lamarck's thoroughgoing materialism and Adrian Desmond has elucidated the populist implications of the Lamarckian "pouvoir de la vie". Populist materialism was a fatal combination, and Darwin, aware that his own beliefs in transmutation and use-inheritance transgressed the limits of respectability in the eyes of those colleagues in natural history whose approbation he craved, was careful to distinguish his views from "Lamarck nonsense of a "tendency to progression" "adaptations from the slow willing of animals "etc". These limits were set not as part of a conscious policy of neutralising hostility, but because Darwin

participated in the consensus that dictated them. Within them, he could feel that his speculation enjoyed intellectual and political legitimacy.¹⁴

The question of publication imposed additional restraints. In the first place, it was Darwin's responsibility to ensure that his work was not misappropriated. It was not uncommon for works of natural history to be plagiarised for political purposes: Lyell's Principles had been plundered by the popular press and misused in this way. Darwin had to see that his own words could not be construed as socially subversive. Harriet Martineau, who had frequently come close to censure, decisively overstepped the bounds of respectability with the publication of the Letters on Man's Nature and Development in 1851, and was hard put to reassemble her following. She was herself a warning of the need for science to protect itself against extravagant and premature claims. In her autobiography she wrote that "science (or the knowledge of fact inducing the discovery of laws) is the sole and the eternal basis of wisdom, - and therefore of human morality and peace". Similar claims by such as Joseph Priestley, associated in the mind of the ruling class with the excesses of the French Revolution, had led the generation of Darwin's grandfather to react against science and dictate the moratorium on speculation that lasted for two decades and more. Darwin could not but be aware of such dangers.

Considerations about the public as well as professional reception of his species views clearly affected both the content and the timing of publication.¹⁵⁵

Secondly, while Darwin's companions could help him towards a personal self-confidence in the legitimacy of his work, they could not aid him in facing the hostility he anticipated from friends and professional colleagues. Since early youth Darwin's desire for approval had found expression in a habitual manner of self-depreciation: when informing Hooker and others of his species theory he spoke of "confessing a murder", being "foolish" and "presumptuous". Where he anticipated rejection he kept his own counsel, as is shown by the infrequency of his discussions about species with Lyell. His confidants were men such as W. D. Fox (in June 1838) and J. S. Henslow (in November 1839) and George Waterhouse (in July 1843), men who were outside the elite corps of "professional" scientific practitioners, free from the pressures to conform to the prevailing orthodoxy and able to give Darwin's views a fair hearing.¹⁵⁶

Darwin had little incentive to interrupt an already overfull programme in order to prepare his theory prematurely for publication; even without his species' work, and the continuing research programme that it entailed, Darwin's work

load, given his fragile health, was too heavy. He regularly underestimated the time needed to complete a project: the work on barnacles, which he had expected to take a year extended to eight, just as the coral volume, intended to take four or five months, consumed nearly five years. Natural Selection was begun when the barnacle work was finished, and, but for the letter from Wallace which prompted the writing and early publication of the Origin, would no doubt have followed a similarly protracted course. There is perhaps a presentist fallacy in contemporary preoccupations with the long gestation of the Origin. Hensleigh Wedgwood took a similar period to take his Dictionary of Etymology to publication and Carlyle's Frederick the Great was not completed until January 1865, having been started some 15 years earlier. To have published earlier, Darwin would have had to interrupt other work upon which his professional reputation more directly depended, and to have presented his case before he considered it complete. The exposure to possible censure by society and by the scientific community reinforced the cautious and methodical attitude to his work that had characterised his approach to life generally since he was a young man. He was not obsessed with species theory and "when he entertained scientific visitors at his home.. he could talk about scientific topics in a noncontroversial and mutually informative way." Having made arrangements for the publication of the theory in the event of his premature death, he had no need to jeopardise his security by rushing

into print before the time was right. Darwin's species theory needs to be seen in the perspective of a life filled with other concerns, with his role in village life, and as head of a large family, with his books on the Geology of the voyage and on the Cirripedia, and with professional matters in the world of science.¹⁷

3) Darwin and the establishment of middle class hegemony

The pencilled Sketch written in the summer of 1842 set the seal on Darwin's London years but did not mark his retirement from London's social and scientific circles. In addition to his major works mentioned above, he maintained a regular and prolific output of articles, and retained extensive contacts with his colleagues among the scientific elite. He attended the gatherings of the BAAS in 1846, 1847, and 1849, as well as the meetings of the Council of the Royal Society. He entertained visitors at Down House, and made regular trips to London, often staying with Erasmus and dining in company with the Hensleigh Wedgwoods and the Carlyles. As well as maintaining his contacts with old friends like Charles Lyell, he actively pursued new ones like Hooker, Huxley and Tyndall. Darwin had left London but he did not resign his position within the scientific community, nor reject his former companions.¹⁸

Although his life at Down was scarcely that of the solitary exile, the move did enable him to adopt that

lifestyle that had appeared so attractive to Darwin while on the Beagle, but that had been rejected in favour of London. His commitment to the village has been interpreted by J. R. Moore in "Darwin of Down: the Evolutionist as Squarson-Naturalist". Moore indicates the extent to which Darwin was establishing himself in a traditional position of moral (but secular) father of the parish. He supported the church and became a close friend of its vicar, the Rev. J. Brodie Innes. He helped to establish and became treasurer and guardian of the Down Friendly Club, he became a county magistrate in 1857, a post he held until he died. That Darwin could hold such a position without the trappings of clericalism is indicative of the high social status enjoyed in mid-century by the prosperous bourgeoisie. Whilst many of his activities were those traditionally carried out by the incumbent of the parish, they were activities over which the secular middle-class were now asserting control.¹⁴⁷

At the same time as Darwin was becoming involved in the Down Friendly Club, Harriet Martineau was undertaking a similar scheme at Ambleside. In her Illustrations of Political Economy she had preached that the laws of society were immutable, that people could improve their position by learning how those laws operated and by accepting them rather than squandering energy and resources in futile resistance. Now in Ambleside she put her ideas into practice; in 1848 she

undertook the first of an annual series of lectures to local families, her object being "to give rational amusement to men whom all circumstances seemed to conspire to drive to the public-house, and to interest them in matters which might lead them to books, or at least give them something to think about." In her second set of lectures she ventured to explain to the "workies" that their salvation lay in their own hands through the exercise of thrift and temperance and followed this up with the institution of a Building Society. At the same time she set herself the task of improving local standards of husbandry.²⁰

Like Charles Darwin, Harriet Martineau assumed in Ambleside a paternalistic role towards the villagers that had long been characteristic of the middle class cleric. That they could each take on such a role without any external authority save that conferred by social class is indicative of the growing self-confidence of the bourgeoisie. While Harriet and Charles moved out to the country, the Wedgwoods, Carlyles and Erasmus stayed in London. Hensleigh and Fanny had the opportunity of moving to Maer when Bessie Wedgwood died in 1846: they preferred to stay in London where they were by now well integrated in the developing intelligentsia. The old circle of the late 1830s had divided between London and the country, but in both areas their representatives remained prominent and influential.²¹

In the two decades following the removal of Charles and Harriet from London, Victorian England prospered and the middle classes disproportionately so. In 1846, the repeal of the Corn Laws, which had in practice made little difference to the price of foodstuffs, symbolised the end of the political domination of the landed interest. In 1848, with revolution sweeping Europe, the Chartists were out-manoeuvred, bringing to an end the fears of popular revolution that had caused the bourgeoisie overwhelmingly to give its allegiance to the established order. Chartism demonstrated "not the weaknesses of the working classes, which were obvious, but the strength of the middle classes". In 1851 the Great Exhibition of 1851 marked their economic self-confidence. The early stages of industrialisation had meant financial insecurity for manufacturers: bankruptcy for Harriet Martineau's father and straitened circumstances in Josiah Wedgwood's family; and the 1840s had witnessed sudden changes of fortune in many middle class families as a result of uncontrolled speculation in the railways. In the 1850s these turbulent years were succeeded by a period of calm and steady growth.²²

The increasing class confidence that accompanied growing economic strength, proportionately increased size and the allaying of fears of popular revolution, served to bring to light divisions within the middle-class consensus. Laissez-faire became allied to doctrines of individualistic

competition and "survival of the fittest" and found its spokesman in Herbert Spencer. It broke through the limits placed on its operation by its original exponents and came to be treated as of universal application. This extreme produced its own reaction not only in the emotional outbursts of Carlyle or the intellectual response of J. S. Mill, but in the practical adoption of paternalism by the middle class, exemplified by the activities of Darwin and Martineau described above. The early-nineteenth century attitude that education fuelled insurrection was supplanted by the view long canvassed by Carlyle, Martineau and earlier exponents like Malthus, that education would convince the labouring classes of the superiority of middle class values. Attempts were made to mitigate the harsher side of laissez-faire, reflected in the New Poor Law, by setting up friendly societies and savings clubs to help the worker help himself. It is clearly misleading to attempt to divide the middle class into Spencerites and paternalists: Darwin is a prime example of the wedding of intellectual Spencerism to practical paternalism. Notwithstanding the doctrine of social evolution, the concept of the harmony of interests between the classes, preached by Adam Smith and affirmed by the early nineteenth century economists, secured a new following as the threat of revolution receded.²³

In this climate of middle class self-confidence, values and ideology were widely debated. In the same year of 1859

that Darwin published the Origin, Samuel Smiles published Self-Help, a book addressed not only to the working classes, but to all men, urging the need for higher moral standards. "The poor man may be a true gentleman - in spirit and in daily life. He may be honest, truthful, upright, polite, temperate, courageous, self-respecting, and self-helping; that is, be a true gentleman. The poor man with a rich spirit is in all ways superior to the rich man with a poor spirit." Smiles echoed Malthus's condemnation of luxurious man, but in the changed political complexion of England his book was treated as a symbol of mid-Victorian culture.²⁴

Also published in 1859, articulating opposition to the extreme application of laissez-faire, was J. S. Mill's On Liberty in which he propounded that the rights of the individual were sacrosanct and of greater significance than whether that individual was a winner or a loser in the struggle for existence. Some months later in 1860 the Essays and Reviews were published, also symbolising the arrival of a new but stable social order. For the authors, in questioning Established Church doctrine whilst dissociating themselves from any intent to arouse popular radicalism were implicitly affirming that the social stability of the country no longer depended on the traditional creed of the Established Church: a spirit of free enquiry, whether in religion or science, was not to be considered subversive of the social order. It is noteworthy that Darwin was among those who offered support to

the embattled theologians.²⁵

Middle class hegemony was by 1859 a growing reality, even if its political expression had to wait for the Reform Acts of 1867 and 1884. A new and more assertive freedom of expression was conferred upon its literary and scientific representatives, a freedom to challenge the parameters of legitimate debate, and Charles Darwin exercised this freedom when he published On the Origin of Species. His timing, then, was apposite, howsoever determined; despite the hostility of some churchmen and some naturalists loyal to the old establishment, the book was a publishing success, and Darwin's friends had arrived at positions of such influence that he could be confident of a fair hearing and secure in the knowledge that publication would not overturn his highly valued reputation as a professional scientist. The loyalists were mostly old men. Whewell died in 1866 and Sedgwick in 1873. The fate of Darwin's theory rested in the hands of younger men, as Harriet Martineau recognised when she wrote to Erasmus: "I should much like to know how large a proportion of our scientific men believe that he has found a sound road to the upper ranges of organised existence. It does not much matter, for it is the next generation that effectively profits by such works."²⁶

Yet the manuscript of 1859, being so closely based upon the early drafts of the theory, had more in common with the

broader consensus of the 1830s than with the more fragmented cultural climate of the mid-Victorian era. Nowhere is this more evident than in a comparison of the Origin with the Descent of Man, published twelve years later. The most obvious contrast, the role of man in the evolutionary scheme, is perhaps the least important. The absence of man from the Origin was tactical, in accordance with the Lyellian maxim of not disclosing too much at a time. Having secured a hearing for evolution in the lower forms of life, it was natural that he should proceed to write overtly on man's place in nature. The important contrasts have to do with the conceptual foundations of the argument and as such provide a good illustration of the changes in hegemonic ideology between the 1830s and 1860s. For in the Descent, Darwin identified himself with the Spencerian extreme of middle class liberalism: the struggle for survival was a positive good rather than a philosophical problem requiring explanation and progress was no longer a possibility, but the norm.²⁷

4) Darwin in transition: his attitude to progress

The rise of Social Darwinism is not difficult to trace; it was foreshadowed both in Carlyle's insistence that "might is right" and in Harriet Martineau's rejection of indiscriminate charity in "Cousin Marshall" as well as in her condemnation of state intervention in, or regulation of, industry. In neither case was this developed into a full acceptance of unregulated competition as later articulated by

Herbert Spencer and others, but their work may be seen as a bridge linking the writing of Adam Smith, in which competition served to inject a dynamic into a largely static and benignly self-ordering society, with that of Spencer in which competition serves as the means of ensuring the upward mobility of the most enterprising in a rapidly evolving, progressive society.²⁶

The proto-Social Darwinism of the companions of his youth helps to explain Darwin's own indecisive attitude to the application to society of the struggle for existence. Darwin approved attempts to analyse the history of society in terms of evolution by natural selection; he assured Francis Galton of his sympathy with eugenics and inserted a pro-eugenics passage into the Descent of Man; in the same work he avowed the merit of "open competition for all men". But he rejected as both utopian and undesirable any attempt artificially to control breeding and fertility, and believed that it was morally objectionable to fail to take responsibility for poverty. In his private life he was actively engaged in local charities to promote self-help, as well as in pressing for social reforms, for example for the regulation of the conditions of labour of chimney sweeps. With the intellectual principle of the social application of his biological theories Darwin was fully in accord, but in practice he was less confident.²⁷

Nor should his agreement with Spencerian theories in the Descent be taken as having the same meaning as his declared belief, in the notebooks of the 1830s, in the social application of natural law. At that time Darwin came to an understanding of social instincts by use of the analogy of the principle of charity. He recorded his views in the first metaphysical notebook in the context of notes on Harriet Martineau's How to Observe. Darwin did not question her belief that universal feelings of right and wrong controlled human relationships. He searched for a natural explanation for these feelings by equating them with the social instincts of animals. Such social instincts were not considered to interfere with the workings of natural selection, rather he saw them as the product of natural selection, since mutual cooperation would enhance the individual's ability to survive. In the context of the 1830s this accommodation of cooperation to natural selection is not surprising. The Poor Law Amendment Act had but recently been passed amidst great opposition founded upon its alleged denial of man's duty to help his fellow man. Its protagonists, just as much as its denigrators, were at pains to show that compassion and a social conscience were abiding human characteristics. Its propagandist, Harriet Martineau, made this clear in her Poor Law tales: "Wherever there is man, there will be charity, unless some disturbing power is introduced to turn his aims

aside, and dishearten him." The old poor law was depicted as such a disturbing power, reform would foster charity.

Although the intellectual basis for philanthropy was challenged by the mid-Victorian interpretations of laissez-faire, the persistence of traditional values in the wider society may be seen in the rebuke issued by the Poor Law Board in 1848, against the too ready granting of outdoor relief:

The present state of things renders it necessary that this Board should now impress on (the various Unions and their officers) the grievous mischiefs that must arise, and the responsibilities that may be incurred, by a too ready distribution of relief to tramps and vagrants not entitled to it.³⁰

Darwin's early appreciation of the social implications of his theories is undoubted: "according to my view marrying late, will make average of life longer for short-lived constitutions will then be cut off", he wrote in the spring of 1839. But to attribute to the young Darwin the Social Darwinism that characterised the Descent is anachronistic. Nor was the reading of Malthus crucial in this matter. Malthus's interest in the individual resided in his capacity for self-improvement through the industry and self-discipline forced upon him by the struggle for survival. That struggle was viewed as being initiated by a shortfall in the means of subsistence but it was not viewed as necessarily engendering competition between individuals. The struggle that gave rise to improvement was against the conditions of life generally: this could comprehend struggle between individuals, between races or against the environment. Competitive individualism

was but one possible response to the universal struggle that Malthus depicted. The struggle for survival could be won in other ways, by paternalistic education schemes and cooperative endeavour for example. The doctrine of necessity, accepted by Darwin in his London years, lent added support to a more charitable attitude to the misfortunes of others: if man was not the architect of his own discomfiture, then the duty of the strong to protect the weak was even more compelling.³¹

Darwin's ability to accommodate his early evolutionary thinking with ideas of social cooperation, and the later association of the theory of natural selection with ideas of competitive individualism, may be explained by changes in the attitude to progress which occurred in the intervening period. Progress is a problematic term because it encompasses such different ideas: at least three usages relevant to this discussion may be discerned. Firstly, there is the progress articulated in geological progressionism. This did not entail any inherent continuing progressive dynamic, but simply described the way in which creation, or the filling up of the world, had occurred. Secondly, there is progress as teleology, as avowed by Malthus. This says nothing about the degree of progress that may be achieved or the timescale envisaged, only that progress is God's purpose, and is therefore ultimately inevitable. Thirdly there is Spencerian perfectibilism: progress is realized by the recognition of

and subservience to those laws which guarantee it. It is qualitatively different from the teleology of progress, since it makes progress man's immediate object, rather than God's ultimate purpose, and consequently demands the conscious sacrifice of conflicting elements in the social heritage. While certain of Darwin's notebook texts may be read in isolation as "out-Spencering Spencer" (in the words of J. C. Greene) they were in the 1830s balanced by others incorporating ideas of duty and social conscience.³²

In the 1830s there had been a perfectibilist alternative to progress through competitive individualism. The social ideology of Owenism was complemented by the evolutionary scheme derived from Lamarck and endorsed by Robert Grant, wherein organisms could by their own willing improve themselves. It was precisely this principle of volition, associated as it was with popular radicalism, that Darwin repudiated in Lamarck, and that inhibited his own expression of faith in progress until the bourgeois Spencer option became available. Across section VIII of the Sketch of 1842 Darwin wrote "Degradation and complication no tendency to perfection. Justly argued <against> Lamarck", and, at the end of section IX, "Degradation and complication see Lamarck: no tendency to perfection". Hopes of progress were in this period necessarily of a limited character: "the simplest cannot help becoming more complicated; and if we look to

first origin there must be progress" (B 18, Autumn 1837)...
"My idea of propagation almost infers, what we call
improvement" (B 204, Autumn 1837)... "In my theory there is no
absolute tendency to progression, excepting from favourable
circumstances!" (N 47, December 1838). In the conclusion of
the Sketch however, Darwin expressed the teleology of
progress: "From death, famine, rapine, and the concealed war
of nature we can see that the highest good, which we can
conceive, the creation of the higher animals has directly
come." 33

In The Origin too, Darwin remained reticent about
offering guarantees of progress:

The inhabitants of each successive period in the world's
history have beaten their predecessors in the race for
life, and are, in so far, higher in the scale of nature;
and this may account for that vague yet ill-defined
sentiment, felt by many palaeontologists, that
organisation on the whole has progressed."

It was suggested by Dov Ospovat that Darwin deliberately
underplayed his own commitment to progress because of the
lack of hard scientific evidence, the anti-progressionism of
Lyell and Huxley, and the adverse reaction to the
progressivist Vestiges of the Natural History of Creation.
But the Origin reflected the attitudes of Darwin's London
years: there is no dissimulation if the transformation of the
concept of progress is itself recognised. Late-eighteenth
century perfectibilism, as expressed by Godwin and Condorcet

had been rejected for its association with the excesses of the French Revolution. The outright rejection which found expression in the 1st edition of Malthus's Essay was tempered in subsequent editions as Malthus laid greater emphasis on the teleology of progress, but the association of perfectibilism with popular radicalism remained sufficiently close to inhibit a strong commitment to progress in Darwin's thought. From the 1830s liberal Anglicans declared their faith in meliorism, while in Darwin's immediate circle Harriet Martineau's growing faith in progress epitomised the transition that was taking place.³⁴

By mid-century moderate meliorism was being challenged by perfectibilist theories of progress. Darwin's assimilation of Spencer's variant, of progress through competitive individualism, imbued phrases such as the "struggle for existence", which had previously comprehended different, but usually undifferentiated, concepts of struggle with Social Darwinist connotations, wherein struggle was identified as proceeding primarily between individuals of the same species. Even then Darwin was no convinced perfectibilist: it is surely significant that the Descent of Man, after offering hope for "a still higher destiny in the distant future", concluded that "man still bears in his bodily frame the indelible stamp of his lowly origin". By placing Darwin's major theoretical work in the context of the late 1830s, it is possible to view his theory of evolution by natural

selection as one offering limited progress as a result of the response of organisms to the universal struggle for life, a theory compatible with, but not dependent upon, the ideology of high capitalism.³⁵

5) Progress in the contextualisation of Darwin Studies

In the preface to Darwin's Metaphor, Robert Young lamented the failure of the history of science to proceed upon a broader perspective that would give it some role in advancing social understanding:

the history of science emerged in the late 1950s and early 1960s from being a relatively narrow study to being part of a wider set of issues in the history of ideas, the history of culture, the history of society and civilisation. Since the late 1970s it appears to have reverted, and I cannot think of a single justification for this. This is not to say that I cannot think of good reasons for doing meticulous scholarship, but surely one needs to emerge from meticulous work to assess its broader articulations and relations. This second moment - the justification of the first - seems to be being forgotten.³⁶

Given the prolific output of historians in recent years directed at the contextualisation of Darwin studies, these strictures seem unduly severe. Indeed, in his survey of recent developments in the history of science, Steven Shapin suggested that significant advances had been made on many fronts. Whilst admitting that there was still fear among traditionalists that the social history of science must undervalue the achievements of scientists, he maintained that the old positivist outlook had largely disappeared.

Summarising the results of a number of empirical investigations, Shapin claimed that the following hypotheses had been satisfactorily established: that "erroneous" perceptions in science were rarely to be explained on the basis of defective instrumentation; that the degree to which scientific theories are acceptable depends on their consonance with the ideological requirements of its architect, and/or with the professional interests of architect and supporters; and that hostility to theories may be determined by their perceived repercussions on other aspects of social ideology.³⁷

The study of Darwin and Darwinism is fertile ground for evidence in support of these propositions. This thesis has suggested that the compelling force behind Darwin's adoption of evolution was the need to explain the human condition as experienced on his voyage, given the failure of an already weak orthodox theology to satisfy the metaphysical questions raised by that experience. It has shown that the theory of natural selection provided an explanation which was consonant with the social philosophy under discussion among his friends and representative of an early-Victorian middle class cultural consensus, and which avoided the taint of popular radicalism attached to Lamarckian evolution. The work of Frank Turner and others has established the use made of Darwinian theory by the professionalisers of science, and J.

R. Moore and Adrian Desmond are prominent among those who have shown that the question of acceptance or rejection of the theory of natural selection depended upon its anticipated resonations upon the beliefs and values of the audience. (This would not have surprised Lyell or Darwin: it was the reason why Lyell opposed the practice of combining the role of cleric and naturalist and why Darwin had slight hope of making converts among the older generation of naturalists).³⁸

Given the advances made in studies of this kind, and the growing consensus among Darwin scholars of "the pressing need to place Darwin in the context of Victorian science", it is perhaps time for contextualists to go on the offensive. In the first place, internalists' fears of a degradation of their subject should be set aside: it is a fear that arises from a confusion of explanation with exoneration or indeed condemnation. When Darwin developed an evolutionary understanding of slavery, he allowed this to moderate his abhorrence of the system. But the morality of the institution is not affected by an appreciation of the manner of its development, and the estimation of one who produces a major theory to explain the origin of life on earth should not be derogated by an appreciation of the sources, both ideological and evidentiary, at his disposal. Nor should such estimation be reduced by portraying the theorist as a creature of his times. This thesis has attempted to "normalise" Darwin, and to render him accessible and recognisable as a cultural figure and not merely as a scientist.³⁹

Secondly, the very concept of a "scientific" idea should be recognised as a methodological, potentially ideological, device. This is very evident in the history of biology for, as Sir Gavin de Beer himself argued, biology is a science with a strong historical component. The distance between ideas in biological theory, in social theory and in economic theory is relatively small, as the parallels between Malthus, Darwin and Spencer clearly indicate. Although categories and labels are indispensable aids to clarification, the extent to which they may inhibit understanding, particularly in an area so overlaid with myth as the nineteenth century "war" between "science" and "religion", has been demonstrated forcibly by J. R. Moore, who argues for the need "to trace the social filiations and ideological consequences of beliefs and values, regardless of their putative "religious" or "scientific" status."⁴⁰

There are undoubtedly difficulties in the way of a more assertive contextualist approach. An obvious danger is crudity of interpretation, as seen for example in the ready association of Darwinism with the Industrial Revolution. There is a symbolic importance in the promulgation of Darwin's theory in the period of greatest English national self-confidence, but the timing of publication of the Origin depended on a complex set of circumstances. With regard to the genesis of the theory, the association raises a series of questions. The Industrial Revolution in Britain was a long,

slow process, especially when compared with the much more rapid industrialisation of, for example, the United States. Areas like London, already heavily urbanised, changed relatively little in the early-nineteenth century, and Darwin's youth was spent in a part of England where the effects of early industrialisation were scarcely dramatic. Although the cholera epidemics of the early 1830s alerted people to the potential dangers of disease and popular unrest in an urban environment, they were essentially recurrences of a familiar and long-established phenomenon, rather than signals of a new one. Even Chartism, while presaging a new period of class relations and of labour organisation suited to an industrial culture, owed much of its ideology and of its forms of protest to the popular radicalism of the late eighteenth century.⁴¹

But if Shrewsbury and London had altered little, the social composition of England had undergone profound change, particularly in the provinces. By the 1830s the middle classes were producing significant numbers of educated young people prepared to challenge the old order. The "hungry 40s", with widespread application of the factory system and the development of the railways, furnished the traumatic experiences that had such an impact upon conventional opinion. The formative period of Darwin's main species speculation preceded this, but an equivalently destabilising effect was afforded by the experiences of the Beagle voyage,

as Darwin himself noted: "Those who have studied history of the world most closely and know the amount of change now in progress, will be the last to object to the theory on the score of small change." On the broader world stage, Darwin had personally witnessed turbulence and diversity in human life on a scale he had not previously imagined.⁴²

Industrialisation was the crucial factor in the emergence of an educated middle class, it furnished experiences that caused old ideas and beliefs to be questioned and it brought in its wake a new phase of European imperialism which in turn conditioned late-Victorian ideology. The association between industrialisation and Darwinism is not a simple one, and the need to avoid oversimplification has been emphasised by Steven Shapin:

there is a marked lack of rigour in much social history of science; work is often thought to be complete when it can be concluded that "science is not autonomous", or that "science is an integral part of culture", or even that there are interesting parallels or homologies between scientific thought and social structures. But these are not conclusions; they are starting points for more searching analyses of scientific knowledge as a social product.⁴³

The need for cooperation between different approaches must also be fully recognised: Edward Manier's The Young Darwin and his Cultural Circle is an intellectual history which first gave recognition to the influence of romanticism

on Darwin. This recognition has led to fruitful studies by other historians, and has raised further questions. Social and biographical history can complement Manier's work and supply some of the missing links. The "romanticism" of the Sketch has been contrasted with the "materialism" of the Origin and presented as a difficulty; but by drawing attention to the romantic quality of Priestleyan materialism, and its availability to Darwin through his Unitarian heritage, the close friendship of Priestley with his two grandfathers, and his personal acquaintance with a contemporary devotee of Priestley, it is possible to see these apparently contradictory tendencies being reconciled.⁴⁴

This appeal for an eclectic approach in the contextualisation of Darwin studies is relevant too to the methodological difficulty of establishing causal relationships between sets of ideas. With regard to Malthus, this study has indicated two ways in which Darwin was predisposed to look at a creative and optimistic meaning in the law of population: firstly, as Darwin himself noticed in his contribution to Krause's Erasmus Darwin, his grandfather had characterised death as the means by which the young and vigorous could inherit the earth. Secondly, Malthus's own changing emphasis from the inevitability of misery to the potential for reform and improvement, reinforced by the greater optimism of Darwin's friend Harriet Martineau, meant that, except for those for whom population theory was a

symbol of oppression, there was no barrier to reading it in a creative light.⁴⁵

Finally, the contextualisation of Darwin studies requires the resolution of historiographical problems. Some of these have been overcome with the publication of manuscript evidence. The legendary image of the introverted recluse that for so long dominated biographical treatment of Darwin has receded as the publication of diaries, notebooks, and correspondence have demonstrated the range of his interests and enthusiasms. Even for the period when he lived in Down, the degree of his contact with the world at large has been shown to be very much greater than was often assumed. More difficult to overcome are the lingering effects of late-nineteenth century selectivity. These resulted from self-censorship by Darwin, committed to scientism and to projecting an image of himself that supported the concept of science as an autonomous activity practised by professionals. They resulted too from the fact that the early Darwinians doubled as historians and it was in their interests to enhance the modernity of their science and so to minimise Darwin's debt to his cultural inheritance. Darwin's son Francis, undertaking the editing of his father's correspondence, was clearly intent on exaggerating the "purity" of his father's work, and the degree to which this has obscured understanding of Charles' character and thinking

is only now, with the publication of the comprehensive edition of the Correspondence, being appreciated.

Whilst historians have been handicapped by the ideologically motivated products of Darwin's protagonists and disciples, it would be wrong to account for the slow emergence of a social history of Darwinism on these grounds. The evidence was always available, but could not be exploited until there arose a historiographical interest in the cultural location of Darwin and his theories. This is now apparent, and attracting a substantial number of practitioners. It reflects a rejection of the divisive effects of scientism and a commitment to a more holistic understanding of society and the ideas generated within it. This study is intended as a contribution to this approach.

NOTES TO CHAPTER 7

- 1 On the Unitarian connection, see Brooke, 1985, p. 61 and Moore, 1987, p. 20.
- 2 S. Herbert, ed., 1980, pp. 9-11, but see also Oldroyd, 1984, p. 351. Darwin to Asa Gray, 11 May 1863, LLD, III, p. 52 and Darwin to Joseph Hooker, 28 July 1868, ML, I, p. 304.
- 3 Schweber, 1985, p. 38. Darwin compared his project with that of Newton on several occasions, for example B 101, N 5, N 36. The problems arising out of the conflicting demands of commitment to a single law of change and of the need to find an evolutionary explanation for all natural phenomena are revealed in the correspondence of Hooker and Darwin in the years preceding publication of the Origin: both men vacillated over the legitimacy of appealing to other agents of change in areas of difficulty for natural selection (for example, Darwin to Hooker, 23 November 1856, LLD, II, 87).
- 4 Stauffer, ed., 1975, p. 287 and see pp. 223, 295, 367. Herbert, 1977, p. 224 draws attention to the prefiguration of Darwin's later vacillation in N 42-3. Richards, 1981, by contrast, holds that natural selection was all-important to Darwin and publication was delayed because Darwin could not explain its operation in the case of neuter insects. Ospovat, 1981, p. 89.
- 5 Ruse, 1979, pp. 164-66; Ospovat, 1981, p. 25; Sulloway,

- 1985, pp. 146-7.
- 6 Descent, p. 946.
- 7 Autobiography, pp. 50,52.
- 8 Autobiography p. 52; Colp, 1978. Beer, 1983, p. 58 draws attention to the neutralising effect produced by equivalence to nature upon Darwin's perception of the Indian wars in South America.
- 9 Keegan and Gruber, 1983, p. 25.
- 10 Examples of notebook entries discussing materialism and the continuity of man and brute are B 214, Q 79, Q 166, M 57, M 123, N 4, QUN 37. On the Grant connection see Desmond, 1988, chapter 2.
- 11 Darwin noted Brewster's review of Comte in M 69-70, 73, 81, 135, N 12, and QUN 25.
- 12 Desmond, 1982, illustrates the way that ideological loyalties determined attitudes on species: in a similar way, professional loyalties (for example the desire to forge zoology's independence from geology) could block consideration of ideas demanding interdisciplinarity. Beer, 1985, pp. 562, 574, explores the role of multivocality in Darwin's language and how this enhanced the acceptance of the Origin.
- 13 The tolerance afforded to the heterodoxy of independent intellectuals like Hensleigh or Carlyle may be contrasted with the high degree of orthodoxy demanded of clerical appointees: F. D. Maurice for instance was removed from his chair at King's College because of his

denial of the doctrine of eternal punishment.

Officeholding within the Establishment carried with it an expectation of loyalty to the Establishment: those not holding office were afforded greater licence, so long as they did not indulge in political activism. See Desmond, 1987 for the contrasting political implications of Darwinism and Lamarckism, and Schweber, 1985, on the peculiarly British characteristic of gradualism in Darwin's evolutionary theory. Gray, 1977, is concerned mainly with the period 1850-80 and therefore presents a picture of a more aggressive bourgeois intelligentsia than characterised the early-Victorian period.

14 Burckhardt, 1977, p. 159 suggests that rather than being a vitalist/metaphysical expression, "le pouvoir de la vie" was a matter of chemistry. This contradicts the "democratic" force of Lamarckism described in Desmond, 1988, chapter 2, since the organism's "willing" is involuntary: but the received view is not necessarily the same as the expressed view. Darwin to Hooker, 11 January 1844, LLD, II, 23.

15 Martineau, 1983, II, 332; Crosland, 1987, p. 305. On the alliance between radical freethought and radical politics, see Moore, 1982a and Desmond, 1988, chapter 2.

16 Colp, 1986a. And see Secord, 1985, p. 529 on Darwin's network of researchers, few of whom knew the details of his evolutionary theory.

- 17 Colp, 1986a, p. 32; I agree with Colp (1986a, p. 27) that Darwin undertook his barnacle study in order to shield himself (in his own eyes as much as in the eyes of the scientific fraternity) from charges of amateurism. I disagree that the 18 month gap between completing the barnacle work and starting to write Natural Selection reflected a reluctance to put pen to paper (Colp, 1977). Given the amount of data he had to organise, the length of time over which it had been collected, and the diversity of sources used, this seems to me not unreasonable. Hensleigh began work on the Dictionary in Maer in 1838 and it was published in 1857; on the long gestation of Frederick the Great see Froude, 1902, II, 91, 305; on the indispensability of the quantity of corroborative evidence to the acceptance of the theory, see Ospovat, 1981, pp. 165-9, and Cohen, 1985, p. 604.
- 18 Barrett, ed., 1977.
- 19 Moore, 1985, pp. 435-481.
- 20 Martineau, 1983, II, 301, 306-7: her patronising tone may offend modern ears, but Martineau was undoubtedly sincere and unstinting in her efforts (see for example her letters to Fanny Wedgwood, January 1849 and May 1851, Arbuckle, ed., 1983, pp. 101, 115).
- 21 Wedgwood, 1980, p. 247.
- 22 Briggs, 1967, p. 299 and see Heyck, 1982, p. 28. On financial insecurity in the pottery business, 1810-20,

- see Schofield, 1963 p. 428. Herbert Spencer, like Harriet Martineau, had personal experience of the rapid changes in fortune that industrial society could produce: his uncle Thomas, with whom he lodged as a teenager, was one of those to suffer in the railways stocks crash (Spencer, 1904, I, 345).
- 23 Heyck, 1982, p. 190 attributes the fragmentation of the early-Victorian middle class consensus in large part to the impact of natural science; however, although natural science became "professionalised" in advance of other disciplines, and undoubtedly served as a paradigm for other disciplines (see Buckle's History of Civilisation) its own transformation was dictated by the same forces as that of other disciplines. Roberts (1979) sees Martineau as an oddity because he associates paternalism with an adherence to older social hierarchies. But Victorian paternalists like Martineau and Darwin were substituting for, rather than joining, the old order.
- 24 Quoted in Tholfsen, 1984, p. 101; Tholfsen suggests that self-help was appropriated by the middle classes and used by them as a means of embourgeoisement and hence of social control.
- 25 Letter to Frederick Temple, signed by Darwin and others, Calendar, 2628.
- 26 Harriet Martineau to Erasmus Darwin, 2 February 1860, Keele, W/M 32974-57.
- 27 Darwin's identification in the 1860s with Spencer's

- social ideology is well illustrated in the divisions that developed between him and Wallace over the role of natural selection in the development of man: Roger Smith, 1972, Kottler, 1985, pp. 413, 420,
- 28 Carlyle, Chartism, p. 45; Martineau wrote in "Cousin Marshall": "charity must be directed to the enlightenment of the mind, instead of to the relief of bodily wants." (Martineau, 1832-4, III, 132).
- 29 Darwin to Francis Galton, 23 December 1869, Calendar, 7032; Descent, pp. 944, 5; Darwin to Francis Galton, 4 January 1873, Calendar, 8724; Darwin to G. A. Gaskell, 15 November 1878, Calendar, 11745.
- 30 M 76-7, N 47; Martineau, 1833, II, 158. Greene, 1981, suggests that Darwin was still concerned with the problem of reconciling competitive individualism with the principle of charity when writing Descent. Minute of the Poor Law Board, 4 August 1848, Keele.
- 31 N 67; Malthus has for too long been the scapegoat of historians seeking the ancestry of Social Darwinism. Just as laissez-faire "appropriated" Adam Smith, so Social Darwinism "appropriated" Malthus. Concepts of struggle in Malthus are undifferentiated and imprecise, and it is only by attributing to him definitions established a half-century later that he may be seen as the architect of Social Darwinism (see also Hodge and Kohn, 1985, p. 205).
- 32 B 108 indicates progressionist thinking. On the

- importance for Darwin of Malthus's teleology of progress
see Brown, 1986, pp. 42-3. Greene, 1981, pp. 95-127
looked for continuity between Darwin's attitude in the
Descent and that of his early years of species
speculation. He concluded that Darwin "did little, if
any, original research in social evolution" and
developed the views which found expression in the
Descent in the context of the flood of social
evolutionary books and articles published in the late
1850s and 1860s. Spencer's social evolutionary theory
was enshrined in Progress: Its Law and Cause, 1857, and
First Principles, 1862, but he articulated his belief in
the inevitability of progress in Social Statics, 1851.
- 33 Gavin de Beer, ed., 1958, pp. 78, 83.
- 34 The passage from the Origin is quoted by Gale, 1972, p.
324, who draws attention to the contrast between the
progressive imagery and the limitations on progress in
the theory. Ospovat, 1981, pp. 210-223, suggests that
Darwin was at all times a believer in progress, but that
until his ideas on divergence had matured he was unable
to see how his theory supported such a position. My
interpretation differs in seeing a qualitative
difference between progress as teleology and progress as
ideology. Moore, 1979, pp. 311-314 notes Darwin's
acceptance of Malthus's "rational expectation" of
"gradual and progressive improvement". This was surely
of a different order to the optimism of the mid-

- Victorian period. Forbes, 1952, p. 83; Martineau, 1838, pp. 127, 105.
- 35 Descent, p. 947.
- 36 Young, 1985a, pp. xii-iii.
- 37 Shapin, 1982.
- 38 Turner, 1978, Moore, 1979, Desmond, 1982 and 1985. For Lyell's views on office-holding in the church by naturalists, see Lyell, 1845, I, 303, and Lyell to Dr Fleming, 6 February 1856, Mrs Lyell, ed., 1881, II, 208.
- 39 Kohn, 1985, p. 1; Shapin, 1982, p. 187; Gruber, 1985, p. 33.
- 40 De Beer, 1969, p. 169; Moore, 1986a, p. 60.
- 41 Young, 1985a, p. 129 suggests that the integration of science in society demands "a process of self-education" in "the historical forces at work in the socioeconomic order" in order to understand developments in science; Heyck, 1982, p. 17 argues that industrialisation did not produce an intelligentsia: the early stages of the Industrial Revolution were succeeded by the establishment of the "moral and material hegemony of the middle class" and this was still well in advance of the emergence of the intelligentsia. The appreciation of the Industrial Revolution as a process covering nearly a century and witnessing different styles of thought, from Enlightenment to Idealism, romanticism to positivism, renders very difficult any attempt to construct a causal relationship between it and any particular ideology.

- 42 E 5e. See Schofield, 1963 on the vigour of provincial culture during the early phase of industrialisation and the prominence of other "lunar" descendents, like Maria Edgeworth, Hensleigh Wedgwood, and Francis Galton; see Moore, 1982a, on the crisis of faith affecting so many of Darwin's contemporaries: Moore, 1986a, p. 66, develops this to show that the crisis was a wider "crisis of legitimation"; the young middle class was ready to take over and develop new ideas about society: any evidence of failure in the old could provide the incentive. It is in this sense that I believe that South America was crucial for Darwin. Heyck, 1982, p. 84, emphasises the traumatic effect of the conditions of industrialising England on the world view of Darwin's contemporaries.
- 43 Shapin, 1982, p. 126.
- 44 Gruber, 1985, p. 13; Beer, 1985, p. 574.
- 45 In Krause, 1879, p. 114, Darwin quoted from Zoonomia, "old organisations are transmigrated into young ones... death cannot so properly be called positive evil as the termination of good."

Bibliography

Abbreviations

<u>AS</u>	<u>Annals of Science</u>
<u>BJHS</u>	<u>British Journal for the History of Science</u>
<u>JHB</u>	<u>Journal of the History of Biology</u>
<u>JHI</u>	<u>Journal of the History of Ideas</u>
<u>VS</u>	<u>Victorian Studies</u>

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